

**THE PRODUCTION OF MODE 2 KNOWLEDGE IN HIGHER EDUCATION IN
SOUTH AFRICA**

by

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Mode 1 knowledge

Mode 2 knowledge

Transformation

Apprenticeship

Cooperative education

Learnerships

DECLARATION

I declare that the Production of Mode 2 Knowledge in Higher Education in South Africa is my own work and that all sources that I have used or quoted have been indicated and duly acknowledged , using complete references.

Doreen C Musson

31 August 2006

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ABSTRACT

The study explores, through a combination of qualitative and quantitative methods, the existence of Mode 2 knowledge and programmes in the South African higher education sector. It begins by theorising about knowledge and takes as a point of departure the propositions about theory-building which state that to explain social phenomena, a system of ideas is required, the conceptual tools of which are able to explain the essential dynamics of such phenomena. It goes on to describe a crisis in a system of ideas that, together with valid critiques, demands to be re-examined as well as the potential for advancing alternative lines of thought. A critical reading and understanding of existing theories leads me to believe that independently, they are all inadequate to explain the relationship between knowledge production and South African higher education in an era of globalisation. This includes the all-encompassing framework of neo-Marxism, the excessive consumerism of academic capitalism, the equation of the worker with modern technology in post-industrialism and the 'lax relativity', complacent and, indiscriminate celebration of diversity in post-modernism. By combining the 'culturally sensitive' critical post-modernism of William Tierney and George Subotzky with the concept of 'late capitalism' as proposed by Frederic Jameson, it is possible to establish a relationship between globalisation and South African higher education on the one hand, and between its' policy and knowledge production on the other. Against the features of the newly proffered theoretical framework of 'critical postmodernism in late capitalism', the study examines the new higher education policy and legislation and ensuing discourse, with particular reference to the Gibbons thesis. It then explores, by using an empirical investigation, the extent to which Mode 2 knowledge production exists in South African higher education. This is done through a selected programme from a former technikon in that demonstrates the key assumptions and perceptions about Mode 2 as held by lecturing staff and as embedded in the structure, design and content of the programme. With the results obtained the study finally makes recommendations for the establishment of a paradigm-shift and for new practices in knowledge production in higher education in South Africa.

TABLE OF CONTENTS

	Page
TABLE OF CONTENTS	i
LIST OF TABLES	viii
LIST OF ABBREVIATIONS AND ACRONYMS	x
CHAPTER 1:	
BACKGROUND TO STUDY, FORMULATION OF PROBLEMS AND AIMS	
1.1 Introduction	1
1.1.1 General overview	4
1.1.2 Globalisation and South Africa	5
1.1.3 Gibbons and the challenges to higher education	6
1.2 Formulation of the problem	9
1.3 Aims of the study	10
1.4 Research design	10
1.4.1 Literature review	10
1.4.2 Empirical investigation	12
1.4.2.1 Introduction	12
1.4.2.2 Selection of site	13
1.4.2.2 Selection of site	14
1.4.2.3 Selection of participants	14

1.4.2.4	Data collection	14
1.4.3	Data analysis	16
1.4.4	Issues of trustworthiness	18
1.5	Outline of chapters	18
1.6	Summary	20

**CHAPTER 2: RE-CONFIGURING POST-MODERNIST THEORY
IN LATE CAPITALISM**

2.1	Introduction	21
2.2	Background	23
2.3	Definition of terms	29
2.3.1	Science	29
2.3.2	Theory	32
2.3.3	Paradigm	33
2.3.4	Critical theory	36
2.4	Theories of knowledge	37
2.4.1	Introduction	37
2.4.2	Neo-Marxism	37
2.4.3	Post Industrialism	40
2.4.4	Academic Capitalism	41
2.4.5	Post Modernism	44
2.4.5.1	Challenges to Post Modernism	50
2.4.5.2	The theory of Frederic Jameson	51

3.6.2	Radical Progressive and Popular Democratic Discourse	88
3.6.3	Stratification Discourse	89
3.7	Notion of Policy-gap	90
3.8	Knowledge Production	92
3.8.1	Traditional Approach	92
3.8.2	Cultural Approach	93
3.9	Development and the Gibbons Thesis of Mode 2 Knowledge	94
3.9.1	Massification and Democratisation	97
3.9.2	Attributes of Mode 2 Knowledge	99
3.9.2.1	Epistemology	99
3.9.2.2	Application-based	101
3.9.2.3	Trans-disciplinary	102
3.9.2.4	Heterogeneity	106
3.9.2.5	Reflexivity and Accountability	108
3.9.2.6	Quality Control	108
3.10	Implications of Mode 2 Knowledge for Higher Education	109
3.10.1	Curriculum Development	109
3.10.2	Collaboration and Partnerships	110
3.10.3	Integration of Education and Training	112
3.11	Summary	116

CHAPTER 4

RESEARCH DESIGN

4.1	Introduction	119
4.2	Research Methodology	119
4.3	Selection of Site	120
	4.3.1 Selection of Programme	122
	4.3.2 Selection of Participants	124
	4.3.3 Data Collection	126
	4.3.3.1 Introduction	126
	4.3.3.2 Documents	126
	4.3.3.3 Participant Observation	127
	4.3.3.4 Interviews	128
	4.3.3.5 Quantitative Methods: Surveys	130
4.4	Analysis of data	131
	4.4.1 Qualitative analysis	131
	4.4.1.1 Documents	131
	4.4.1.2 Participant Observation	133
	4.4.1.3 Interviews	134
	4.4.2. Quantitative Analysis	134
	4.4.3 Integration of Qualitative and Quantitative Methods	139
4.5	Issues	140
	4.5.1 Reliability	140
	4.5.2 Validity	141
	4.5.3 Ethical Issues	142
4.6	Summary	142

CHAPTER 5

PRESENTATION AND DISCUSSION OF FINDINGS

5.1	Introduction	145
5.2	Presentation of Survey Findings	146
	5.2.1 Survey question One	146
	5.2.2 Survey question Two	148
	5.2.3 Survey question Three	149
	5.2.4 Survey question Four	152
5.3	Presentation of Key Themes	156
	5.3.1 Paradigm-shift	156
	5.3.2 Curriculum	157
	5.3.2.1 Pedagogy	157
	5.3.2.2 Workplace and application-based	159
	5.3.2.3 Trans-disciplinary	161
	5.3.3.4 Heterogeneity	162
	5.3.4 Role of research	163
	5.3.5 Partnerships	165
	5.3.6 Community Development	166
	5.3.7 Integration of Education and Training	167
5.4	Synthesis of Surveys and Themes	170
	5.4.1 Interpretation of Policy Demands	170
	5.4.2 Compelling Mode 2 Knowledge Issues	171
	5.4.3 Perception of Competencies	173
	5.4.4 Enrichment of Concept of 'Co-operative Education'	174
5.5	Summary	176

**CHAPTER SIX: SYNTHESIS OF FINDINGS, DISCUSSION AND
RECOMMENDATIONS**

6.1	Introduction	178
6.2	Overview of Findings	179
	6.2.1 Literature survey	179
	6.2.2 Empirical Investigation	180
	6.2.2.1 Paradigm-shift and pedagogy	181
	6.2.2.2 Curriculum development	181
	6.2.2.3 Trans-disciplinary and heterogeneity	183
	6.2.2.4 Partnerships and community development	183
	6.2.2.5 Integration of education and training	184
6.3	Recommendations	185
	6.3.1 Policy makers	185
	6.3.2 Governance of higher education	186
	6.3.3 Institutional change	187
	6.3.3.1 Pedagogical training	187
	6.3.3.2 Trans-disciplinary structures	188
6.4	Limitations	189
6.5	Summary	189

BIBLIOGRAPHY

APPENDICES

LIST OF TABLES

		Page
TABLE 3.1	HEADCOUNT OF STUDENT NUMBERS IN HE INSTITUTIONS 2001	83
TABLE 3.2	HEADCOUNT ENROLLMENT IN HIGHER EDUCATION-GRADUATES AND DROP-OUTS	84
TABLE 3.3	PERCENTAGE ENROLLMENT BY RACE/ COLOUR	84
TABLE 3.4	DISTRIBUTION OF HEADCOUNT ENROLLMENTS BY NEW INSTITUTIONAL TYPES 2001	85
TABLE 3.5	DISTRIBUTION OF EMPLOYED IN ECONOMIC SECTORS 2000-2003	114
TABLE 3.6	PERCENTAGE EMPLOYED BY EDUCATIONAL QUALIFICATION AND GENDER	114
TABLE 3.7	APPRENTICESHIPS AND ENTERPRISE TRAINING	115
TABLE 3.8	DECLINE IN APPRENTICESHIP TRAINING	115
TABLE 3.9	INCREASE IN LEARNERSHIP TRAINING- AGREEMENTS REGISTERED	115
TABLE 3.10	NUMBER OF LEARNERSHIP AGREEMENTS REGISTERED PER LEVEL (NQF LEVELS 1-8)	116

TABLE 4.11	PROFILES OF PARTICIPANTS	124/ 5
TABLE 4.12	SUMMARY PROFILES	125
TABLE 5.1	RESPONSES TO SURVEY QUESTION ONE	146
TABLE 5.2	RESPONSES TO SURVEY QUESTION TWO	148
TABLE 5.3	RESPONSES TO SURVEY QUESTION THREE	150
TABLE 5.4	SUMMARY OF TOP (TWELVE) RESPONSES (SCORE OF 15)	152
TABLE 5.5	RESPONSES TO SURVEY QUESTION 4	153/4
TABLE 5.6	COMPETENCIES RANKED IN ORDER OF IMPORTANCE	154/5
TABLE 5.7	PRE- 1994 BINARY / TRINARY MODEL	168
TABLE 5.8	POST- 1994 UNITARY / TRINARY MODEL	168
TABLE 5.9	DECLINE IN APPRENTICESHIP TRAINING	169
TABLE 5.10	INCREASE IN LEARNERSHIP TRAINING- AGREEMENTS REGISTERED	169
TABLE 5.11	NUMBER OF LEARNERSHIP AGREEMENTS REGISTERED PER LEVEL (NQF LEVELS 1-8)	170
TABLE 5.12	APPRENTICESHIPS AND ENTERPRISE TRAINING	170

ABBREVIATIONS & ACRONYMS:

ANC	African National Congress
C&Y	Child and Youth
CDE	Centre for Development Enterprises
CHE	Council on Higher Education
COSATU	Congress of South African Trade Unions
CTP	Committee for Technikon Principles
DoE	Department of Education
DoL	Department of Labour
ERIC	Education Resources Information Centre
FTE	Full-time Equivalent
GEAR	Growth Employment and Re-distribution Programme
HE	Higher Education
HOD	Head of Department
HSRC	Human Sciences Research Council
MNC	Multi-national Corporation
NATED	National Education Policy
NCHE	National Commission on Higher Education
NPHE	National Plan for Higher Education
NQF	National Qualifications Framework
NSA	National Skills Authority
NSDS	National Skills Development Strategy
PMD	Public Management Development
RDP	Reconstruction and Development Programme
RPL	Recognition for Prior Learning
SAIDE	South African Institute for Distance Education
SAQA	South African Qualifications Authority
SASCE	South African Society for Cooperative Education

SETA	Sector Education and Training Authority
TNC	Trans-national Corporation
TSA	Technikon South Africa

CHAPTER 1

BACKGROUND TO STUDY, FORMULATION OF PROBLEMS AND AIMS

1.1 INTRODUCTION

The importance of knowledge as process and '*problematique*' is supported by commentators across a wide spectrum of theoretical persuasions. The debates have recently given rise to considerable interest in the role of higher education in producing knowledge suited to the needs of the 'age of globalisation' or 'late capitalism' whose increasing complexity of challenges is matched by the decreasing capacity of institutional (and fiscal) arrangements to respond credibly and effectively.

As primary producers of knowledge and providers of education and training, higher education institutions are at the forefront of attempts to conceptualise and define what counts as valid knowledge. The conception, by higher education institutions, of Mode 1 knowledge has its antecedents in the Newtonian model which equated science and knowledge and by logical extension, producers of knowledge and scientists. Their ethos was one of an enshrined autonomy, places where knowledge-seeking students went on pilgrimages to widen their intellectual horizons. The conventions of 'science' legitimized all cognitive and social norms. Knowledge was produced, contained and distributed within independent disciplines and clear distinctions were made between fundamental (pure) and applied science. This Mode 1 conception of knowledge is today being challenged by Mode 2 practitioners whose search for solutions to complex projects requires input from more and more groups, including pressure groups that demand a more socially and economically accountable role for higher education institutions. The Mode 2 contextualization of knowledge affects the epistemology of science and *a fortiori* of what counts as valid knowledge. Mode 2 knowledge (not science) is practised by practitioners (not scientists), is based self-consciously on knowledge produced in the context of

application and in search of solutions to transient global or contemporary problems, as identified periodically by a diversity of stakeholders. It produces and distributes knowledge across disciplines and sites, is characterized by team-work and is subject to the quality control of a diversity of stakeholders.

The research is an attempt to verify the existence of Mode 2 programmes in the higher education sector in South Africa and to identify means of distinguishing them from traditional disciplinary Mode 1 programmes. I investigated a selected Mode 2-type programme in a higher education institution and assessed it against the Gibbons thesis and the attributes of Mode 2 knowledge. A complementary aim is also to assess the Gibbons thesis against the knowledge production imperatives of the new higher education policy. The consideration for the study grew out of my personal, political and professional experience in education in general and in higher education specifically. I have taken a particular interest during the last decade in the debates, surrounding the role of higher education and policy in the production of knowledge.

I began the study with a proposal for theory-building in order to "...help us understand better our own past, locate ourselves more exactly in the present and discern a little more clearly what our educational future may be (Kempfer & Tierney, 1996: 3). The study's point of departure was two propositions about theory-building: In order to explain social phenomena, a system of ideas was needed. These conceptual tools were able to explicate the essential dynamics of such phenomena. The second proposition is that a crisis in a system demands that its ideas be re-examined, the validity of critiques be analysed and the potential for advancing alternative lines of thought be considered for their potential worth in the future. Towards this end, I have had to examine the major writings on these theories with a view to establishing their historical antecedents and main conceptual tools. For example, to address, theoretically, the impact of globalisation on higher education and knowledge production, there is need for a coherent theory.

The tendency, since the rise of post-modernism, to marginalise the radical theories of the past from intelligent discourse was a concern for me and I looked at attempts to arrest it.

It was to the latter commentators that this study looked for inspiration. The return to the primacy of market values and retreat from progressive politics was evident in the works of many theorists and analysts. It would seem that alternatives to the 'neo-liberal market ideology' had all but disappeared in attempts to bolster strategies of partial social change and accommodating the status quo. At the same time, alternative theories to the market ideology were themselves limited in their explanatory value. A critical reading of the theories of neo-Marxism, post-Industrialism, academic capitalism and post-modernism as presented by both their proponents and critics, led me to believe that each one remained inadequate in their explanatory value. The all-encompassing frameworks of neo-Marxism, the extreme consumerism of Academic capitalism and post-Industrialism's equation of the human worker with modern technology could not adequately express the vision for and attempts at growth of individual countries with their own cultural peculiarities. The ascendancy of post-modernism and its complacency, indiscriminate celebration of diversity and 'lax relativity' were seriously challenged by *critical* postmodernists. Critical post-modernists such as Frederic Jameson, William Tierney and George Subotzky proposed that in the era of globalisation the social characteristics of society should be assessed within a framework that posits that relations between people (and with nature) were determined by the moments of the productive life of a particular society. Such a theory reflected deep moral reactions to issues of social justice (Subotzky, 1998; Tierney 1997) and was rooted in political economy and 'cognitive justice' (Visvanathan 1999). Critical post-modernists also insisted on the need for a common language of communication (theory of hermeneutics of communication) that was in sync with "... the emergence of new formal features in culture (and) the emergence of a new type of social life and a new economic order" (Jameson 1983: 113). And in the world of late capitalism, culture had fundamentally mutated in a way that included a "...momentous modification of its social function" (Jameson 1992: 48). Jameson's theory that post-modernism was the "cultural logic of late capitalism" proposed the uninterrupted nature of development, with capitalism expanded into late capitalism and the promise of a future Utopia. His theory straddled the post-modernist debates and those of the more totalising theory of Modernism. At least theoretically, he saw the integration of the developing world into the developed. By combining Jameson's

more international and economic perspective with Tierney's cultural and socially determined perspective on society and higher education, the study proffered a reconfigured theory of 'critical post-modernism in late capitalism' in order to provide insights into the impact of globalisation on policy-making and knowledge in SA.

1.1.1 General overview

The quarter century following World War 11 commonly referred to as the 'Golden Age' of modern capitalism due to the success of Keynesian policies, gave rise to a variety of theories of development. Following the collapse of the Bretton-Woods system of fixed exchange rates, the oil price shocks and the build-up of debt in the developing world (Mohammed 2002) the new phenomenon of globalisation had plunged these development theories into disorder. Although some commentators considered globalisation to be a process that had been in existence for more than four hundred years (Scott 2004), it was generally defined in the specific context of today's trans-national "...exchanges and flow of goods, people and high-tech information and knowledge..." (Featherstone 1990: 2). It was further characterised by declining productive growth, drop in real wages, increase in real interest rates, widening of the gap between rich and poor and the regular occurrence of financial crises (Mohammed 2002). Trade, technology and labour supply, the so-called 'big three' of inequality in the global economy (Aghion & Williamson 1998) were based on terms that led to exacerbate the divisions between developed and developing worlds. "The changes in the world economy are captured in the term globalisation which refers to the increasing marginalisation of national boundaries in terms of trade, finance, firms, the labour market and knowledge" (Orr 1997:43). They served the interests of the developed world and were determined and controlled by the G7/8, by international financial institutions, multinational corporations (MNC's) and trans-national corporations (TNC's) who " have a distinct advantage in the context of the internationalisation of production, distribution and the increasing centrality of information; a great deal of the innovation and information technology that are central to competitiveness takes place in the TNC's or is financed by them at considerable cost" (Ibid: 44). International capital was able to control and monopolise the development and provision of the new technologies and

especially information technologies. At a political level there was less government management of the economy and less government spending on social services (Mohammed 2002). These conditions reshaped the relations between science, technology, innovation and knowledge production (Bell 1980: xv). A critical moment of 'take-off' towards 'a Knowledge Age' was reached in the 1990s' (Castells, 1998: Introduction) in which the key to the competitiveness of countries was considered to lie in knowledge and the capacity of individuals and groups to use it effectively.

Development co-operation agencies such as the World Bank and the International Monetary Fund sponsored their own studies on the nature and impact of globalisation which tended to focus on the practical use of knowledge by using it more effectively for development. A recent report by the World Bank stated it unambiguously that ".knowledge has become, more than ever, a primary factor of production throughout the world" (World Bank 1994: ix). The new 'language' of knowledge in the service of development, centred round key terms such as 'a knowledge economy' (Reich 1991; Leadbeater 2000; Anon 2001), 'the learning organization' (Senge 1999: Introduction) and 'knowledge management' (Davenport & Prusak 1998). Accounts situated in this language claimed that the knowledge of the 'knowledge worker' was their 'means of production, the 'human capital' which placed them in a position of permanent virtue (Butler 1999: 136). Such approaches to knowledge production were for the most part uncritical in a social context. Critical accounts of development that drew upon the work of Foucault (1970, 1972) were situated in a very different understanding of knowledge and its relationship to power than that which was implicit in the thinking of these development aid agencies. Since Foucault, social researchers see knowledge and power as interdependent and they have posed questions that are deeply laden with values of social justice (Cowen, 2000: 333-42).

1.1.2 Globalisation and South Africa

Socio-economic conditions in South Africa represented a microcosm of the global tensions as it tried to balance its responses to globalisation with reconstruction and

development at home. While a comprehensive account of these conditions is not part of the scope of this study, a few observations were necessary. I based these observations on the perspectives of both government and alternative voices. In examining the policy responses to knowledge production, 1994 was chosen as the watershed year in the periodisation of South Africa's history. Although the primary features of the economy have remained unchanged since the mining revolution of the late nineteenth century and which was inaugurated by the discovery of diamonds and gold, the responses and interventions by the pre- and post-1994 governments differed substantively as revealed in policy documents of both periods. With South Africa's return to the global arena after decades of isolation, the decisions and actions of the new government were much more mediated by external, global forces than before.

Amongst local social theorists, George Subotzky's conceptions of both globalisation and reconstruction and development provided crucial insights into an understanding of South Africa's socio-economic conditions and their relationship with higher education. In challenging the 'single-path conception' of globalisation (Cowen 2000: 303), Subotzky proposed a theory of 'a complimentary alternative' in place of the 'marketization of knowledge' (Subotzky, 1998; 2000). Such a framework made it possible to pursue both global development and equity in South Africa. Being part of the 'global village' did not imply enslavement or submission to it. Subotzky argued convincingly that globalisation was not an "inevitable and incontestable process" (Subotzky, 1997: 111) and that the very tensions inherent in it made it possible for it to be challenged, at both ideological and pragmatic levels. His theory had implications for reconstruction, development and redistribution and for a new base and mode of producing knowledge that would narrow the gulf between higher education and society and would make possible meeting the many challenges that faced the sector. Higher education's role in knowledge production was in the final analysis mediated by national and institutional peculiarities.

1.1.3 Gibbons and the challenges to higher education

The worldwide challenges facing higher education institutions have been addressed by diverse commentators (Chisholm 2001; Clark 1998; Slaughter & Leslie 1997; Scott 1997; Gibbons et al 1994). A common qualitative view centred round the demands for personal development, the demands of the labour market, technological innovation and changing professional attitudes (Clark 1998: 11-12; Slaughter & Leslie 1997: 37) and for competences in information communication technologies (Gibbons et al, 1994; Castells, 1994). The continued mis-match between what higher education offered and what society demanded was captured in a number of publications: 'The Moral Collapse of the University: Professionalism, Purity and Alienation' (Wilshire 1990); 'Education without Impact: How Our Universities Fail the Young' (Douglas 1992; 'The University in Ruins' (Readings 1996). 'Profscam: Professors and the Demise of Higher Education' (Sykes 1988); 'Will Teach for Food: Academic Labour in Crisis' (Nelson 1997).

It was no accident that the Gibbons/Scott thesis was strongly reflected in the higher education policies and plans of the new government in South Africa. Michael Gibbons and Peter Scott argued that there existed a positive correlation between globalisation and the mandate given to the HE sector by the new government on the one hand and the validity of Mode 2 knowledge production and economic growth on the other. Both the Gibbons' thesis of Mode 2 and the responses of the new government identified the relevance of higher education in the 21st century in terms of the imperative to adapt and respond organisationally *and* epistemologically to the new forms of knowledge production. Internationally the 'movement' for the promotion of Mode 2 knowledge production is being led by Gibbons and Scott, followed by a few notable proponents in South Africa. Indeed, the clamour to debate the Gibbons thesis has intensified since his stint as advisor to the Ministry of Education (1999). Outside of SA dedicated centres were established for the promotion of Mode 2 knowledge for example, the International Center for Transdisciplinary Research in the USA, The Centre for Higher Education Policy Studies in the Netherlands and the Commonwealth Higher Education Management Service and the Association for the Study of Higher Education.

Reinforcing the Gibbons thesis, the policy responses of the government asserted that the major change "...is that knowledge is generated not only in its traditional manner in the universities. Knowledge production becomes an increasingly open system in which a number of actors from different disciplines and from outside higher education participate. The value of knowledge is assessed not only on scientific criteria but also on utilitarian and practical grounds....Knowledge is increasingly trans-disciplinary and trans-institutional...and new types of quality assurance and funding are emerging in response to these trends" (NCHE 1996: 125-126). Similar policy responses of the new government were also widely debated and critiqued but with an emphasis on the gap between policy and implementation (Samoff 1996; Soudien & Gilmour 1999; Sampson & Vally 2000; Jansen 2000, Muller 2000, Kraak (ed.) 2000; Sayed 2002) rather than on modalities for implementation. In a special edition of the *International Journal of Educational Development* (2002), entirely devoted to South Africa, the need for critical policy dialogue about educational change in South Africa was highlighted. Empirical research in other parts of the world showed that there existed programmes that intentionally or unintentionally departed substantially from the traditional framework of knowledge production and so challenged dominant pedagogies of learning. Conscious that "...educational policies in South Africa have a very recent history and consequently their implementation and institutionalization is far from complete" (Sayed, 2002: 29-30) the research conducted here attempted to make a contribution towards an 'implementation dialogue' on alternative modes of knowledge production. Significantly it wished to make a case for the existence and promotion of Mode 2-type knowledge in higher education through the presentation of empirical information.

The study took its inspiration from the works of Gibbons and Scott and with a special South African emphasis the works of George Subotzky, to make a case for the promotion of Mode 2 knowledge production as a legitimate way to address 'the gap'. At the same time, I assert that lack of implementation partially lies in the dominant paradigms that guided the thinking and action of the *academia*. For the most part, the contribution of higher education to the development of the country was conceptualized within either an

abstract, myopic academic Newtonian paradigm or within a narrow technocratic economic paradigm. Currie and Newson (1998) suggested that instead of waiting for policies academics needed to take the intellectual lead and implement alternative and progressive policies 'by themselves' (Ibid: 297). Paradoxically, increasing financial constraints have opened windows of opportunity for the re-conceptualization of the role of higher education and its knowledge production.

1.2 FORMULATION OF THE PROBLEM

In view of the contradictions in globalisation, the socio-economic conditions in South Africa as well as in the organization and ethos of the higher education sector, this study poses the following research question within the current context of higher education transformation in South Africa:

How is Mode 2 knowledge production realized in higher education institutions?

In seeking an answer to the above research problem, the following questions are addressed by the study:

- i) what are the most important theories which served as precursors to post-modernism?
- ii) what are some of the key debates around post-modernism and critical post-modernism and how have these shaped the theoretical underpinnings of current changes in higher education? In particular, what are the main tenets and nuances of the Gibbons/ Scott thesis and its usefulness in explaining changes in knowledge production in higher education?
- iii) what are the key features of South African discourse since 1994 in terms of higher education policy and knowledge production? How are these issues reflected in policy and legislation regarding higher education transformation, with particular reference to the Gibbons thesis?
- iv) in view of the theoretical framework, how is Mode 2 knowledge production reflected in a programme offered by a former technikon in South Africa? What key assumptions

and perceptions about Mode 2 knowledge are held by lecturers and embedded in the programme structure, design and content?

v) what recommendations can be made for practice?

1.3 AIMS OF THE STUDY

The study aims to examine the production of Mode 2 knowledge in higher education in South Africa. The main aim is further refined into the following objectives.

The study aims to:

i) identify and discuss the most important theories which served as precursors to post-modernism. It aims to outline key debates around post-modernism and critical post-modernism and indicate how these shaped the theoretical underpinnings of current change in higher education. In particular, attention is given to the main tenets of the Gibbons thesis and its usefulness in explaining higher education change.

ii) examine the key features of South African discourse since 1994 in terms of higher education policy and knowledge production. The study debates these issues as reflected in policy and legislation regarding higher education transformation, with particular reference to the Gibbons thesis.

iii) explore the extent to which Mode 2 knowledge production is demonstrated in a selected programme from a former technikon in South Africa and is explored by means of an empirical investigation. Key assumptions and perceptions about Mode 2 as held by lecturing staff and as embedded in the structure, design and content of the programme are examined.

iv) make recommendations.

1.4 RESEARCH DESIGN

1.4.1 Literature review

A "selective review" (Schumacher 1993: 554) of the literature on knowledge in general and specifically on knowledge production, dissemination and its purpose in the

contemporary world, both here and internationally, constituted the preliminary and first phases of the investigation. This enabled me to formulate the research questions with increasing focus and to design strategies and instruments for data collection. The selection was made at a time when crucial macro organizational and restructuring issues were dominating debates in the higher education sector in South Africa, a situation that spawned critiques of Mode 2 knowledge production that had an influence in higher education circles that was quite out of proportion to their small numbers.

Most of the claims about knowledge in higher education were made within a paradigm that promoted traditional science and disciplines. Such a Mode 1 paradigm was premised on the belief that knowledge was discipline-based, carried a distinction between fundamental and applied, was produced by individual scientists or academics, was produced in traditional universities, was subject to quality control by peer review, transcended time and space, reflected neutral and uniform categories and was accretionary, that is, scientists built on the work of predecessors and undertook basic research in similar ways and provided similar responses to similar questions. The same paradigm was demonstrated in teaching, since the results and knowledge of the research were incorporated into undergraduate and graduate curricula. A Mode 1 paradigm remained the force that drove the work of the faculty and by extension the function and purpose of the whole university in the 1990s'. Thus the relationship between university and society was not necessarily synchronized around common goals and, in the 'age of globalisation', led to the synonymous use of the terms 'crisis' and 'university'. Mode 1 paradigm found strong international antecedents in the works of 'academic capitalists' such as Burton Clark (1983a, 1983b, 1997a, 1997b, 1998) and Slaughter & Leslie (1997). Ironically, commentators in South Africa who were critical of the 'academic capitalists', found themselves in the same company and paradigm when they appealed for the continued separation of the traditional ethos in higher education knowledge production and that of knowledge producers outside the university (Cloete & Bunting 2000; Jansen 2000; Muller, Cloete & Badat (eds.) 2001; Muller & Cloete 2004).

The second half of the twentieth century saw challenges to the validation of Mode 1 knowledge. In 1994 one powerful statement of how knowledge was changing and how it would continue to change was found in the 'Gibbons/ Scott thesis'. Gibbons and his team characterized the new form of knowledge and knowledge production as Mode 2 knowledge, distinguishing it from the traditional and more familiar Mode 1 knowledge (Gibbons et al 1994; Gibbons 1997, 1998a, 1998b, 2001, 2003; Scott 1995, 1997a, 1997b, 1998; Nowotny, Scott & Gibbons, 2003; Nowotny 2003). Mode 2 researchers self-consciously based themselves on 'post-modernist epistemology'. While I could find no published literature on the epistemological bases of Mode 2 by Gibbons and his team, the relevant verbal statements were made in Berlin in 2001 by them in a joint presentation entitled 'Transdisciplinarity: Joint Problem Solving among Science, Technology and Society, An Effective Way for Managing Complexity' a copy of which found its way to me by rather extra-ordinary circumstances.

The appropriation and uncritical espousal of post-modernism by Mode 2 advocates was challenged by leading thinkers such as Frederic Jameson (1981, 1983, 1988, 1992, 1994, 1998) and Cowen (2000) who pleaded for a theory and its complementary paradigm that incorporated the economic *and the cultural*; and by William Tierney who advocated 'a culturally contextualized critical late post-modernism' (Tierney (1991, 1996a, 1996b, 1997, 1998; Kempner & Tierney (eds.) 1996; Kempner & Tierney 1996) and in South Africa by George Subotzky (1997, 1998a, 1998b, 2000, 2003a, 2003b); Cooper & Subotzky (2001), Andre Kraak (2000, 2004), Linda Chisholm (1991, 1994) and Brennan et al (1996) each proposing different strands of Mode 2. Their views were reflected in the new policy frameworks of the Council on Higher Education (2000a, 2000b, 2000c,) the Centre for Development and Enterprise, a private 'think-tank' (2000) and the Committee for Technikon Principals (1995, 2000). All these thinkers were at the cutting edge of revisiting and contesting theoretical and practical issues round Mode 2 knowledge.

1.4.2 Empirical investigation

1.4.2.1 Introduction

An empirical investigation facilitated my insight into the process adopted by the participants in the production and implementation of knowledge. Such insight was subject to an understanding of the national and institutional policy contexts of knowledge production and provided for in the documents. In order to demonstrate concretely that Mode 2 type programmes *did* exist in higher education required more than document analysis. The design of qualitative methods yielded more in-depth and holistic pictures of the programme. Through a single case study the details and dynamics of the programme could be described. The qualitative data revealed by the participants in the case study, showed the commonality as well as the diversity in the perceptions of participants. I was also interested in the focused perception of participants of key knowledge production concepts. There was consequently the need to match the qualitative research methods in the design with quantitative methods. Through a quantitative survey design I was able to capture data that standardised the responses of participants. Those narrow, focused responses were further corroborated with in-depth qualitative data that provided the substance and flesh to the bones of the quantitative findings.

1.4.2.2 Selection of site

The information reported in the study was taken from the primary setting of one programme group within one of four faculties at a Technikon where I was a staff member. The institution offered career-oriented qualifications in all nine provinces through a distance education delivery mode. The specific qualification that was the focus of the investigation and titled, before the name change in 2004, as Child and Youth Care (Development replaced Care in 2004) was made up of a combination of modules delivered to 232 students, the majority of whom were based in Gauteng province. More detailed descriptions of the site (the HE context, environment, conditions, and history) are provided in chapter five (presentation of findings).

I did not select the sites because they were representative of Mode 2 knowledge but rather because of my hypothesis (professional instinct seemed a more suitable phrase) that they did contain important Mode 2-type information. The institutional site was selected by virtue of my position as permanent staff member. By a confluence of circumstances (see chapter four) the case had selected me, a situation that might be characterized as 'opportunistic' and 'convenience sampling' (Patton 2001: 240-242). The selection was only finalised once I had clarified the purpose of the investigation and my professional intuition was validated in that it differed substantially from the typical Mode 1 university programme and although standard to technikon programmes, also went beyond them. In confirming the selection, I had to consider a number of factors: the potential representative-ness, the potential of the case to portray as natural a state as possible (Drew 1996: 195), the co-operation and availability of the participants and the time period available. In addition, I had to consider the site as one that would induce participants to feel comfortable, confident, co-operative and relaxed. This led me to make very specific arrangements about the times, venue and duration of the collection of information.

1.4.2.3 Selection of participants

While each individual staff member could have represented 'a case' (Miles & Huberman 1984: 151), the units of analysis were the programme staff as a group, identified at the outset of the investigation as a captive assignment (Drew 1996: 269) since the staff members in the programme group were included as the focus of investigation for the purposes of the designated study. By choosing the programme the participants were automatically chosen and their quality as informants was determined by virtue of their appointments as expert staff in the production of knowledge in the field of Child and Youth Development. "A good informant is one who has the knowledge and experience the researcher requires, has the ability to reflect, is articulate, has the time to be interviewed and is willing to participate in the study (Denzin & Lincoln (eds) 1998: 73). Only the twenty-two programme staff working in the learning programme as full and part-time lecturers, tutors and managing/ administrative staff were defined as eligible.

More detailed descriptions of the participants are presented in chapter five (presentation of findings).

1.4.2.4 Data collection

Information was collected for the following categories of data: documents, participant observation, interviews and surveys.

Programme documents consisted of Government higher education policy documents which, with one or two exceptions, were those published between 1994 and 2001. For documents on the institutional policies, I collected those published specifically on programme development and curriculum design while documents of the programme included those dealing with programme structure, design and content. Additional documents about the programme included tuition schedules, staff directories, correspondence, minutes of meetings, recordings of workshops and written feedback from staff and from students.

Participant observation and Field notes came from a series of seven programme group workshops and one faculty workshop. I selected three for the collection of data. The selection was based on the potential matching of the theme (s) of the workshop with the themes and purposes of the study. They took place between April 2001 and February 2003 with duration times of between one and three days each. Three workshops in October 2001, February 2002 and November 2002 respectively, were used for two types of data: field notes through participant observation and for the collection of survey data (see surveys below). The workshops took place in one of the many seminar rooms allocated by the institution for such purposes. Copious notes were made of what was said and not said and what was done and not done at the workshops by the participants. The faculty workshop in February 2002 was tape-recorded by the former and made available to interested parties.

A formal six-part questionnaire of ten questions each that had to be aborted due to the low response rate of thirteen percent. This was replaced by four informal, open-ended

focus group interviews conducted between June 2001 and November 2002. The emphasis in the interviews took as its guide the questions in the aborted questionnaire. They took place in June and August of 2001 and in April and June of 2002. Two were conducted in the office of the head of the programme, one in the office of the deputy and one in the tea-room. Each interview lasted about one and a half hours. The first interview was tape-recorded as per the agreement with the head of department but was stopped midway in response to objections by one or two participants while the rest were recorded in copious field notes. Some responses and amended responses were also provided afterwards by email by the participants. In between the four interviews, questions for my own clarification were posed and answered by the participants by telephone and email, altogether eleven times with ten of the twenty-two informants by email and twenty times with three or four by telephone.

I also attended three formal monthly staff meetings during July, August and September 2001. The minutes were distributed to all those who attended.

The three workshops selected for data -collection purposes happened in October 2001, February 2002 and November 2002. Their selection was based on two factors: the potential matching of the theme (s) of the workshop with the survey questions, and the availability of time that could be utilized for the purpose of the study. The workshops took place between April 2001 and February 2003 each lasting between one and three days. It was those which were held over more than one day that were selected as it was easier to negotiate for space and time for the distribution and immediate collection of the four survey questionnaires (two questions on day one and one question each at the next two workshops, altogether four questions). The workshops took place in one of the many seminar rooms allocated by the institution for such purposes. On each of the three workshops chosen for the purposes of the surveys I stayed for the duration of the workshops with the one in November 2002 being co-facilitated by me.

1.4.3 Data analysis

As a qualitative study I tried to achieve validity and reliability by giving due recognition to the letter and spirit of the policy documents published by the new government between 1994 and 2001. I executed this through an examination of the content of the documents as well as through a reading of critical commentaries on them, with the emphasis on the knowledge production imperatives. An analysis of the institutional documents was limited to those policies dealing specifically with programme and curriculum design and development and how they impacted on the programme and its participants.

Through the field notes derived from participant observation I wanted to ensure that my research strategy would not distort the data nor serve my vested interests and prejudices (Patton 1990:55) and conscious attempts were made by me to record the responses of participants as realistically as possible (McMillan & Schumacher 2002: 79). Those realities were defined within a framework tentatively suggested in chapter two and I accepted that the degree to which explanations 'matched the realities' relied on the cultural assumptions of participants (Denzin & Lincoln 1994: 489-490). (Altheide & Johnson in Denzin & Lincoln 1994: 487-488).

The interview questions were designed in order to provide two types of information: rich descriptions and patterns. Detailed descriptions were not written down in full detail during the interviews. These were forwarded by participants in writing afterwards. Through the interviews I gained information on the following patterns: views on the typology of knowledge; definitions of key terms (for example competence, learner-centred, multi-disciplinarity, problem-oriented and application-based); how they prioritised the new draft policy goals and the characteristics of technikon education.

For the survey question, the 'Prioritisation of Policy Goals', a handout containing a random list of ten goals with no descriptions was distributed. Participants had to list the items (goals) in order of priority. Responses were listed in terms of actual majority numbers. Where respondents indicated an item differently from the majority their

responses were not counted. It was difficult to make valid conclusions as no benchmarks were used. By ranking all the items participants were forced to choose one over the other which in itself might have presented a weakness in the question. Ranking the items individually might have provided more useful results.

A handout of a summary of a master's degree programme offered by the Center for Transdisciplinary Research in the United States of America was distributed to participants a week before the workshop with the request to study it as an example of a Mode 2 programme offering. The survey questionnaire on 'Compelling Mode 2 issues' was then distributed at the workshop and it was designed to extract data on participants' views on the typology and characteristics of the programme.

The survey question on the 'Differences between University and Technikon programmes' was accompanied by a handout containing a list of thirty-four characteristics of university and technikon programmes. The items were based on the literature. The thirty-four terms were not described but left open for interpretation by participants. Eleven coded (C& Y) feedback responses were among the general workshop feedback forms. I decided to base my analysis on a selection of responses from all the forms received. The seventy-one were those that were received in a completed form.

The survey question, 'Importance of Competence' attempted to obtain the views of the participants on the importance of each competency required of their graduates. A handout containing twenty competencies extrapolated from a survey report by the Centre for Development Enterprises in Johannesburg was distributed at the workshop. The data collected were at ordinal level, making possible only the estimated means of the ranking, between 0.9 and 6.0. Following on the CDE survey (2000) the study took a mean of less than four to denote that informants interpreted the competencies to be unimportant.

1.4.4 Issues of trustworthiness

Through mitigating procedures (triangulation) it was possible to minimize threats to the trustworthiness of the findings. The contentiousness of issues of partiality, prejudice and

preconceptions on the part of both researcher and informants served as an ethical compass to me that the validity of the findings had to go beyond my own bias and ideology. Acutely aware of the small size of the 'sampling' and the absence of empirical evidence on other similar or dissimilar programmes, I made no claims for the external validity of the findings but rather compensated for this absence of 'rigour' through the capturing of 'thick-rich' descriptions.

1.5 OUTLINE OF CHAPTERS

Chapter two began with an explication of problematic terms and concepts of science, theory, paradigm and critical theory and then proceeded to discuss the most important theories - neo-Marxism, post-Industrialism, Academic Capitalism and post-modernism all of which served as antecedents to critical post-modernism. I examined the limitations of post-modernism and its succession by critical post-modernism.

Chapter three discussed knowledge production in two contexts: the external forces (globalisation) and the changing conditions and trends globally; and the internal, domestic dynamics in South Africa. It developed and suggested an account of the impact of globalisation on the country through the perspectives of leading local critical post-modernists who saw the key causal dynamic in the rise of 'other forms of knowledge production' as the seemingly contradictory rise of both globalisation and democratisation. It looked at the impact of those conditions on higher education policy in South Africa and the imperatives for knowledge production. It then reviewed the details of the various discourses on knowledge production in contemporary South African and it did this according to a tentatively suggested categorisation or taxonomy: the high skills discourse, the radical progressive and popular democratic discourse and the stratification discourse. It then continued by examining the new HE policy and its philosophical pillars as contained in the key documents published between 1994 and 2001. Finally, it discussed

the concept of Mode 2 in detail, its nature, features, attributes and its implications for the production of knowledge in higher education.

Chapter four identified and presented the design and research strategy used in the study. The methods of investigation were multiple and primarily qualitative with the main purpose of empirically verifying the existence of Mode 2-type programmes in higher education. While qualitative methods were able to yield rich description of the programme, quantitative survey methods were needed to provide more focused and standardised responses.

Chapter five presented the findings of the case study, conducted over a period of thirteen months at one higher education institution. Through a case study methodology the Mode 2 features in one programme were identified by utilising a variety of strategies that is, document analysis, participant observation, informal interviews and quantitative surveys. The results revealed by a single case study were unique, but I tried to show how it could yield lessons for practitioners and policy makers.

Chapter six provided a synthesis of the findings through a number of propositions extrapolated from the literature and the case study. It sketched the various pitfalls that practitioners of Mode 2 might encounter and suggested strategies for avoiding them. Recommendations were made at theoretical and practical levels towards the establishment and reinforcement of a Mode 2 culture in higher education.

1.6 SUMMARY

The chapter tried to provide outlines of the background theme of globalisation and its impact on the changes in knowledge production: the conditions that reshaped the relations between science, technology, innovation and the producers. The 'knowledge age' was reflected in the capacity of individuals and groups to use it effectively and in the context of values of social justice and culture. For South Africa these values are captured,

theoretically in a conception of globalisation that negates 'a single path' and the 'marketization of knowledge' and instead offered 'a complimentary alternative' framework in late capitalism, which made possible the pursuit of both globalisation and domestic development. Knowledge must be produced to satisfy the demands for personal development, the labour market, technological innovation and for changing professional attitudes. Echoing and amplifying the new higher education policy, the thesis of Mode 2 identified the relevance of higher education institutions in the 21st century in terms of the imperative to adapt and respond organisationally *and* epistemologically to this new form of knowledge which is being produced.

CHAPTER 2

RE-CONFIGURING POST-MODERNIST THEORY IN LATE CAPITALISM

2.1 INTRODUCTION

This chapter offers a re-examination of existing ideas about theory-building, combined and re-configured into a plausible theoretical framework within which South Africa's response to knowledge production and generation in the new millennium of globalisation could be explained and understood. The fundamental question posed in this chapter is whether the theory of 'critical postmodernism in late capitalism' (Jameson, 1992: 22-25) together with a 'culturally contextualized critical late postmodernism' (Tierney, 1996: 1-9; Subotzky, 1998: 5) of looking at or 'reading' the world and society and at education specifically could guide the actions of higher education institutions at this juncture in the history of South Africa. In Cowen's terms (Cowen, 2000: 333) 'reading the world' means "...to offer an interpretation of the political, economic and historical worlds in which we variously live and in which education takes place" and reading the global "...leaves

room for a range of categories of analysis which stress the political, the social *and the cultural*" (ibid: 337 *-emphasis added*). I would like at the outset state that I find myself at quite a loss to address the philosophical, sociological and psychological dimensions of the rather slippery concept of 'Culture' (as opposed to cultural traditions) within and across societies, despite the fact that the term is a central one in the study. At a time when the concept is used, often interchangeably with 'race', in South Africa, it requires a separate, independent and much-needed study. While it may be possible to point to trans-societal cultural processes which may take various forms and processes that sustain the exchange and flow of goods, people, information, knowledge and images (Featherstone, 1990: 1) it remains necessary to analyse the culture of a 'nation-state', a particular society, a group at a particular historical moment. "Culture is probably the broadest concept of all those used in the historical social sciences. It embraces a very large range of connotations, and thereby it is the cause perhaps of the most difficulty" (Wallerstein, in Featherstone (ed) 1990: 31). The anthropological view that all persons share some traits with all others, all persons also share other traits with only some others and all persons still have traits which they share with no one else, is supported by critics on 'the left' (Ibid: 31). "When we talk of traits which are neither universal nor idiosyncratic we often use the term 'culture' to describe the collection of such traits or of such behaviour, or of such values, or of such beliefs. In short, in this usage each group has its specific 'culture'. To be sure, each individual is a member of many groups, and indeed of groups of very different kinds - groups classified by gender, by race, by language, by class, nationality and so on. Therefore, each person participates in many 'cultures' (Ibid: 31). The preceding usage of the concept refers to the ways in which groups distinguish themselves from other groups and represents what is shared within the group and not shared outside it. To follow the *ultima ratio* of the term the very word 'group' is problematic. It is accepted that 'groups' share some kind of self-awareness, patterns of socialization combined with a system of reinforcement of their values, prescribed behaviour and organisations (Ibid: 33). However culture is always an 'evolving phenomenon' (Ibid: 34).

The dialectics of culture is captured simply and expressively by Tierney (Tierney, 1996):

Culture is not simply the functional or structural aspects of a particular group or organization as if those structures or functions exist in a codified reality. Rather, culture pertains to how particular groups and organizational participants make sense of their lives through the use of specific structures or functional vehicles. Individuals and organizations are.... in a dynamic system that both frames and is framed by human interaction” (Tierney in Kempfer & Tierney, 1996: 15).

For the production of knowledge “a cultural perspective assumes that knowledge is socially constructed. Individuals and groups define knowledge not merely through an objectively situated context such as a research project but also through the historical and social situations in which individuals find themselves. The point of course is not that knowledge advances whimsically but that discursive fields exist that play a powerful role in framing how individuals think about knowledge. Knowledge is not discovered; it is created” (Ibid: 15). Jameson defines the constitutive relationship between the praxis of groups and what they conceptualise as value or desire as reflected in their values and attitudes, structurally limited by material conditions and projected in the form of culture (Jameson, 1981: 281-282) and is, according to Marshall Sahlins, ultimately grasped as the instrument of class domination, legitimation and social mystification (cited in ibid: 282).

I have structured the chapter by first reflecting upon the background against which this theory is conceived. Then attempting to define the meanings of the problematic terms used in the study I thereafter give an exposition of the key features of critical post-modernism as a theory including the importance of culture, identity and progress. This is preceded by the main arguments of the theories related to critical post-modernism, neo-Marxism and post-Industrialism. After that I give an account of the contemporary, competing post-1994 discourses in South African higher education that include a relationship between theory-building and macro policies. Finally I propose the beginnings of a new theory labelled ‘critical postmodernism in late capitalism’ (Jameson, 1988; 1991; 1992; 1995; 1998; Kempfer & Tierney 1996; Tierney, 1996, 1997; Subotzky, 1998, 2001) as a useful paradigm to understand, interpret and transform higher education in South Africa.

2.2 BACKGROUND

South Africa today is patently in search of a new social and economic equilibrium in a globalised world, a search that is marked by a disjuncture between increasingly progressive policies and the challenges of implementation. As cutting edge institutions of the knowledge industry, higher education institutions have a primary responsibility for implementing such policies (Peter Scott, in Barrat & Griffen (eds) 1997: 14-26). Yet the mood in the sector is often demonstrated by a sense of uncertainty about its capacity to respond positively to the simultaneous challenges of integration and globalisation (Subotzky, 1998: 3-12; 2001; Sayed, 2002: 29-33; Kraak, 2004: 252-269). The complexity of the challenges is matched by the decreasing ability of existing institutional arrangements to respond credibly and effectively. Most constituencies agree that howsoever those challenges are interpreted many features of established educational and social organization must undergo significant change. The vision in South Africa of a shared community in which democratic practice, economic prosperity, equality and justice are accessible to all, lies removed from its realization. Primary factors attributed to this 'crisis' of implementation have been cited as fiscal constraints, the breakdown of certainties and boundaries, the blurring of definitions and loss of self-confidence and the powerlessness of the paradigms that guide higher education action. There are many signs today that we are going through a period of fundamental shifts or transition at a global and national level; that something is on the way out while something else is being born. In a note-worthy speech Vaclav Havel, former president of Czechoslovakia and illustrious poet and thinker has this to say about transitions:

The distinguishing features of transitional periods are a mixing and blending of cultures and a plurality or parallelism of intellectual and spiritual worlds. These are periods when all consistent value systems collapse, when cultures distant in time and space are discovered or rediscovered. They are periods when there is a tendency to quote, to imitate, and to amplify, rather than to state with authority or integrate. New meaning is gradually born from the encounter, or the intersection, of many different elements (July, 1994).

This considered view is supported by Peter Scott (1997) when he states that "In the late twentieth century the signs of intellectual dissolution are everywhere. All semblance of a shared academic culture rooted in supposedly universal cognitive values, unified subjects that transcend the particularities of disciplinary traditions or transient market exchanges, has disappeared (quoted in Barratt and Griffen, (eds) 1997: 14). The uncertainty is extended into the certain world of 'science' and the very "...idea of 'science' and robust theoretical frameworks built on sustained empirical inquiry, has been remorselessly deconstructed. The very methodologies of truth-seeking have been called into question, as well as their revisable results. Rigorous critique has been replaced by lax reflexivity" (Ibid: 14). The ubiquitous technological civilization that spans the entire globe in the new millennium binds together all human societies and submits them to a common global destiny. At the same time globalisation has produced relationships that fail to connect with the most intrinsic nature of reality, with culture and with localised human experience and it is both a source of development and of disintegration and doubt, essentially only having globalised the surfaces of the lives of people. The internationalisation inherent in globalisation has made communication among thinkers and scholars easy and inevitable (Altbach, & Teichler, 2001: 5) and the lumping together of individual cultures increasingly possible but the fact is that these same individual cultures are beginning to realise with urgency their own inner autonomy and the inner differences of 'other cultures'.

I am sensitive to the claim that the dominant theory building took place in the industrialised world and is supposedly 'trickling' down to the developing one. "With few exceptions, the knowledge and institutional patterns transferred are from the major industrialized nations to the Third World- or even to other more peripheral industrial countries- with very little traffic in the other direction" (Altbach , Berdahl , Gumpert (eds) 2002: 3). The history of theory-building is the history of attempts to conceptualise a historical and social substance itself in dialectical transformation (Jameson in Waugh, 1992: 132) and I contend that like world culture, theory-building is based on cross-germination and transmutations between centre and periphery, developed and developing worlds. The anti-colonial ideas of a Franz Fanon as expressed in his well-known book

entitled 'Wretched of the Earth' (1964:) or a Neville Alexander in his writings (2002, 1979) for example, inspired a whole generation of anti-racist thinkers in the South and the North, becoming canons for theorising in and about the new millennium. At another level, art historians have claimed that the 'modernist' movement in the visual arts in Europe especially Picasso's work, was inspired by African art works, masks and carvings which were brought back by travellers (or looted) from Benin. A caveat has indeed been issued against 'modernist ethnography' "in which one aspect of a group's life is taken to represent them as a whole" (J. Clifford quoted in Denzin & Lincoln (eds) 1994: 153). The globalised culture reflects the "transnational political, economic and cultural forces that traverse and constitute local and regional worlds" (Ibid.).

My initial inclination is to doubt the application of post-modernism to South Africa as I see it as a theoretical structure imposed from the developed world and which does not resonate with South African practice and experience, what Ricoeur calls the hermeneutics of suspicion. In other words, South African self-understanding could not be explicated using European categories of modern/post-modern but has to find its own mode of self-understanding, symbolism and language. Ricoeur's theory of interpretation (cf <http://plato.Stanford.edu/entries/ricoeur/> December 2004) provides important insights as he seeks to dialectically integrate, Wilhelm Dilthey's dichotomy of explanation (*erklären*) and his existential understanding (*verstehen*). Ricoeur shows the complexity involved in the hermeneutic task of assigning functional roles to words and the possibility of multiple levels of coherent meaning. He distinguishes two approaches for getting at the deeper meaning of words or texts: the one is *demythologizing* which recovers hidden meanings from symbols without destroying them and the other is a *demythifying* one that destroys the symbols by showing that they present a false reality. When confronted with a text, the reader or interpreter must adopt a stance of critical self-understanding, not unlike the stance adopted in the critique of ideology. The second hermeneutic moves from an explanation to an understanding. Ricoeur distinguishes two stances regarding the referential function of text: a subjective approach and a structuralist alternative. "...the very work of interpretation reveals a profound intention, that of overcoming distance and cultural differences and of matching the reader to a text which has become foreign,

thereby incorporating its meaning into the present comprehension a man is able to have of himself" (Ricoeur, 1974: 4). The subjective approach incrementally constructs the world that lies behind the text but relies on the world-view of the interpreter for its pre-understanding. Although the constructed world-view may gradually approximate that of the author, the interpreter's subjectivity could not be fully overcome. But once objective meaning is released from the subjective intentions of the author, multiple acceptable interpretations become possible. Thus meaning is construed not just according to the author's world-view but also according to its significance in the reader's world-view. In a more structuralist approach, understanding might only be explained by reference to the social and historical setting in which understanding occurs and in the discursive or dialogical situation in which communication takes place. Truth and meaning do not await discovery, but are negotiated by actors who come to consensus on issues of truth and meaning through social discourse.

Few intellectuals in contemporary post-1994 South Africa write about theories and their relationship with social realities. As a discursive practice it continues to be dominated primarily by the voices of European and male intellectuals and academic elites who speak to and about one another with coded familiarity. While I could not have arrived at an understanding of the social realities of South Africa without an examination of their works to build on my own understanding of post-modernism in its multiple manifestations, I felt little inclination to ally myself with the academic hierarchy and exclusivity. I mostly found myself on the outside of the discourse looking in. At a recent conference on globalisation and education that I participated in, post-modernism was not claimed by any of the presenters of the papers despite their utilising the very language of post-modernism. The current education landscape, governance and democracy in the country were discussed and terms such as 'progressive', 'the state', 'the nation', 'relevant knowledge', diversity and micro narratives used - without any recourse to theory (2003 PMD Conference) the evening's social event, the setting quickly became a field of contestation when I played 'devils advocate' and asserted that critical post-modernism was a legitimate guide to action in higher education. I was told by another black person that I was wasting my time that "this kind of talk does not relate in any way to what black

people feel or experience." Other colleagues were quick to point out that "this does not relate to what is happening in our lives namely racism and resistance to transformation". No one sympathised with my insistence that racism was perpetuated when blackness was associated solely with concrete gut level experience conceived either as opposing or having no connection to abstract thinking and the production of critical theory. My defence of critical post-modernism and its relevance to black people, women and anti-globalisation protesters lacked conviction, largely because I approached the subject itself with caution and suspicion. Certainly we ought to continuously interrogate the idea that there is no meaningful connection between black peoples' experience and critical thinking about aesthetics or culture. Critical of most writing on post-modernism I perhaps am more conscious of the way in which the focus on 'otherness and difference' that is one of the hallmarks of post-modernism, seems to have little concrete impact as an analysis or standpoint that might change the nature and direction of post-modernist theory. Would my own 'otherness', my questioning of its 'ideology of no ideology', its rejection of class as a unit of analysis and its ubiquitous relativity, be celebrated by post-modernism? bell hook says it pointedly, "In the post-modernist world there is "unprecedented support among scholars and intellectuals for the inclusion of 'the other' in theory. Yes! Everyone seems to be clamouring for 'difference', only too few seem to want any difference that is about changing policy or that supports active engagement and struggle (another no-no word)...Too often it seems the point is to promote the appearance of difference within intellectual discourse, a 'celebration' that fails to ask who is sponsoring the party and who is extending the invitations. For who is controlling the new discourse? Who is getting hired to teach it, and where? Who is getting paid to write about it? (hook, - in small letters as chosen by -author- 1990: 291).

Also, since much of post-modernist theory in South Africa has been constructed in reaction to and against the modernist project, there is seldom any mention of black class experience or writings by black people and definitely not of black women. Even if an aspect of black culture is the subject of post-modern critical writing the works cited will usually be those of black men. This is despite the modernist themes of the pre-1994 struggle in South Africa which centred round those who separated the struggle for

national independence from the struggle against capitalism and those who conflated the class struggle and national emancipation (Musson, D 1998: chapter 5/ sahistory.org.za 2005). These were the grand narratives of the struggle that could legitimately be labelled as modernist. Gender, the environment, trade unions and other 'micro' struggles were subsumed under those grand narratives with its totalising truths that explained everything. There was little critique among black female activists of patriarchy as a master narrative. The ways in which South Africans addressed identity, progress and culture conformed to a modernist universalising agenda. Interestingly the students at another event (Black Forum Africa Week, 2004) were adamant about the validity of Marxist and neo-Marxist theories in understanding and explaining post-1994 South African society; while post-colonial post-modernist thinking were seen as an important way of resisting oppressive European discourses. As mentioned above, anti-colonial thinkers such as Franz Fanon and other African diasporas could be considered key pre-cursors to the questioning of post-modernist statements. A chapter from Kwame Anthony Appiah's book 'In My Father's House' (1993) is entitled "Is the Post in Post-Colonial the same as the Post in Post-Modern?" Post-colonialism as a term referring to a set of theories that grapple with the legacy of the nineteenth century and the dilemmas in the development of national identities in the wake of colonial rule and in the ways knowledge production served the interests of the colonisers, is not dealt with in this study, as are critical accounts of development that are situated in different understandings of knowledge and its relationship to power (McGrath, 2001: 3). The important argument for example that underdevelopment is the result of knowledge deficits (Ibid.) falls outside the scope of the study

2.3 DEFINITION OF TERMS

2.3.1 Term: science

In a discussion of knowledge production the problem of language is difficult as in Western cultures knowledge is often used interchangeably with scientific knowledge while the word 'science' itself is an eccentricity of the English language (Carr, 1964: 56). At the end of the eighteenth century natural science had contributed immensely both to

knowledge of the world and the physical attributes of human beings. The history of knowledge production since the eighteenth century could well be written as the attempt to distinguish scientific knowledge from non-scientific knowledge. The question arose whether science could not also further knowledge of society, a question that led to the immense development of the social sciences throughout the nineteenth century. The method by which science studied the natural world was applied to the study of human affairs, a proposition summed up clearly in the title of a work by Herbert Spencer (1851, 'Social Statics') and a century later by Bertrand Russell (1958). It was Russell who had hoped that "a mathematics of human behaviour as precise as the mathematics of machines" (Russell, 1958:20) would be developed. The evolution in natural science confirmed, spurred on and complemented progress in the social sciences with the Newtonian tradition becoming diffused to more and more fields of enquiry to ensure its compliance with what was considered sound scientific practice. In his collection of essays, under the title *The Ascent of Man* Jacob Bronowski reminds us in the essay entitled 'Creation and Evolution', that science "is a very human form of knowledge....Every judgment in science stands on the edge of error.... science is a tribute to what we can know although we are fallible.....we have to understand that the world can only be grasped by action, not by contemplation. The hand is more important than the eye....The hand is the cutting edge of the mind". (Bronowski, 1973: 374). Carl Sagan put it succinctly that science is a candle in the dark that shines a light on the world around us and allows us to see beyond our superstitions and fears, beyond our ignorance and delusions (Sagan, 1996). The typical dictionary definition of Science as "the observation, identification, description, experimental investigation and theoretical explanation of phenomena, activities that are restricted to a class of natural phenomena and applied to an object of inquiry or study" (Oxford Concise Dictionary, 2000) has been replicated by social scientists. Observation and description of phenomena, formulation of hypotheses to explain the phenomena, use of the hypothesis to predict the existence of other phenomena and application of the predictions for example through experimentation (Khan, 2002). The new science of the Scientific Revolution in the seventeenth century not only grew out of the old but has also bequeathed its very language to the new. Both quantitative and qualitative researchers speak of and legitimately use the language of observation,

hypothesis and application. The knowledge produced either way has scientific merit and value. The crucial distinction for the purposes of this study is the socially constructed-ness and culturally-situatedness that are mediated by the economic issues at a particular moment of the history of a country. "It seems to be a recurrent historical pattern that intellectual innovations are first described as misguided by those whose ideas are dominant, then ignored and, finally, taken over by original adversaries as their own invention" (Gibbons, et al, 1994: 2).

A few years ago, a description of the nature of science and the pertinence of the relationship between science and knowledge production was offered in a seminal work which was based on empirical evidence entitled: *'The New Production of Knowledge: The Dynamics of Science and Research in Contemporary Societies'* (Gibbons et al 1994). The authors contend, that until recently, periodised by the 'oil-crisis' of the 1970s', the conventional way of producing knowledge, which they label as Mode 1, has been a closed system leading universities to hold the monopoly in knowledge production and training provision. Mode 1 has grown within the Newtonian model which itself is equated with the Humboldtian university model (Altbach & Teichler, 2001: 6). This model is summed up as a common academic model that originated from the medieval European university, and an increasingly international academic marketplace, the use of English as a lingua franca distance education and the use of the Internet partnerships among higher education institutions and the 'harmonisation' of qualifications (ibid.). Through new social, cognitive and intellectual practices new norms of what constitutes science have been established. Because of this new conception of what constitutes science, new forms of knowledge production are emerging that are qualitatively different.

It is our contention that there is sufficient empirical evidence to indicate that a distinct set of cognitive and social practices is beginning to emerge and they are different from those that govern Mode 1. The only question may be whether they are sufficiently different to require a new label or whether they can be regarded simply as development that can be accommodated within existing practices. These changes appear in the natural and social sciences but also in the humanities. They can be described in terms of a number of attributes which when taken together have

sufficient coherence to suggest the emergence of a new mode of knowledge production (Gibbons, 2003: 1).

The broad thesis of the work has caused some controversy among social scientists and in South Africa specifically has led to the questioning of the validity of Gibbons thesis to "provide an intellectual framework to describe what happens inside a South African university" (Jansen, 2000: 160). The authors themselves claim that the thesis is welcomed by:

politicians and civil servants struggling to create better mechanisms to link science with innovation, researchers in professional disciplines such as management struggling to wriggle out from under the condescension of more established, and more 'academic' disciplines and researchers in newer universities, other non-university higher education institutions or outside the academic and scientific systems strictly defined. Its detractors with "the most to lose (and) who were most sceptical" -researchers in those established disciplines and institutions who feared that the quality of science would be eroded if these levelling ideas gained political currency and that their own autonomy would be curtailed if more explicit links were established between research and innovation (Nowotny, Scott & Gibbons, 2003: 1-2).

The pioneering work mentioned above, articulated the relationship between 'science' and society in order to give substance to "...the twin notions of 'science speaking to society' and 'society speaking back to science'" (Ibid: 12). Against this background the post-modernist conception of science that the empirical world exists as it appears to scientists seems plausible. Whatever a scientist is able to do *qua* scientist, is done *qua* social commentator. It does not assume it knows the truth about the empirical world *a priori* but assumes that it must discover and create its knowledge. Equally compelling is the post-modernist view of society as having "...moved beyond the categorizations of modernity into discrete domains such as politics, culture, the market and.....science"; and that knowledge that is produced does not only have to be reliable but needs to become "socially robust" (Nowotny, 2004: 1) an injunction that has become relevant in the globalisation of the world. The heady development of modern technology represents a civilization in human history that spans the entire world and the science on which it is based describes only a single dimension of reality. The paradox of this science is that the

more knowledge that is gained about the world, the less understanding of the world is demonstrated as seen in the social and political states of affairs and of nations. The technology spawned by globalisation has made the lives of humanity in general easier but the inequities between and within countries have widened. This technology has also spawned changes in the ways in which knowledge is produced in contemporary society.

2.3.2 Term: theory

Investigations in education are permeated by analyses of various theories, classical, modern, post-modern, conservative or progressive. The existence of many social theories demonstrates the development of education and the complexity and dynamism of phenomena and helps to reveal the transparency and openness of education as a science. The differences in theoretical and methodological approaches to education research are also reflected in the interpretations of theory as a definable term. Sociologists assert that a theory "encompasses the entirety of systematized knowledge and hypotheses by which the phenomena may be empirically verified and predicted in the sense of their development trends, or by which certain unsolved scientific problems can be unveiled" (Hafner, 1998 :456). The term *theory* is sometimes used synonymously with paradigm and models, which leads to some confusion in the social sciences. This causes commentators to apply what is called "linguistic therapy" (Khan, 2002: 1) and the need to formulate propositional syntaxes in a rigorous manner with logical consistencies (ibid.). Linguistic therapy demands that the reader be on the same page as the writer in the definitions of terms in order to ensure sensible and coherent communications and dialogue in the terms of 'a hermeneutics of communication' (Radford, 2002: 1-16). Hermeneutic understanding is based on interpretation, rather than observation (ibid.) and it attempts to lay out the principles by which a text and social phenomena can mean something to the person experiencing it. While theories are explanatory in nature and predictive they must "...yield testable implications which is a commonly accepted criterion of whether we allow the term 'scientific theory' to be applied to a string of propositions in a substantive area of research and discourse" (Khan, 2002: 1). "...theory can refer to the framework of thought that structures and guides any distinctive activity.

Used in this sense, it denotes the underlying conceptual framework in terms of which a particular theoretical enterprise is carried out and which provides it with its general rationale" (Carr, 1995: 32). It is "...a practice forced into a new form of self-reflectiveness....human activity bending back upon itself, constrained into a new kind of self-reflexivity. And, in absorbing this self-reflexivity, the activity itself will be transformed" (ibid: 40). In Popper's words: "Theories are nets cast to catch what we call 'the world': to rationalise, to explain, and to master it (Popper, 1968: 112). Theories have also been defined as the "critical practices which make philosophically foundational claims..." (Docherty (ed) 1993: 4). They are "...narratives and between narratives you choose subjectively what seems most useful or gives you most comfort" (Soper, 1997: 44). The very process of theory-building involves generalising from historical experience and the specific and this has to be done today in the context of an "increasingly interdependent global system" (Giddens, 1990: 16).

2.3.3 Term: Paradigm

A paradigm is closely connected with a theory and is widely seen as "a set of facts and convictions which is systematically presented, that is presented as a theory whose function is to initiate theoretical productions, and practical research in certain fields thereafter, so that it appears in this sense as a source of some future of already existing theoretical composition" (Hafner, 1998: 458).

Since the publication of Thomas Kuhn's 'The Structure of Scientific Revolutions' in 1962 and republished in 1970, the term paradigm has proliferated and the interest of social scientists in Kuhn's work arguably supersedes that of his own peers in the field of physics. Kuhn himself bemoans the threat that his idea of incommensurability (see page 35 below) poses for natural scientists that cling to normal science predicated on the assumption that the scientific community knows what the world is like until a crisis is identified through the occurrence of anomalies (Kuhn, 1962/1970a: 5-24). What is of keen interest to social scientists in Kuhn's use of the term 'paradigm' is its reference to the conceptual frameworks and worldviews of individual scientists and various scientific communities. According to Kuhn the acquisition of a paradigm occurs in three phases or

periods: (a) normal science which consisted primarily of puzzle solving and of increasing the match between 'the facts' and the paradigm's predictions. The scientists in this period do not refute the paradigm but assume its correctness and truth (b) a period of crisis occurs as a result of the emergence of anomalies. These occur when the observational facts do not match with what the paradigm has led to be expected (c) the emergence of a new paradigm is then necessitated. During periods of 'normal science', scientists work within the same paradigm and scientific communication and work proceeds relatively smoothly until anomalies occur or a new theory or model is proposed which requires understanding traditional scientific concepts in new ways, and which rejects old assumptions and replaces them with new ones. In his motivation Kuhn states that it is disagreements about the nature of legitimate scientific problems that lead him to his theory of paradigm shift. "These I take to be universally recognized scientific achievements that for a time provide model problems and solutions to a community of practitioners" (Kuhn, 1962: 24).

The Kuhnian principle of incommensurability is distinguished at four levels (1) language is not neutral. Different paradigms, even if they use the same vocabulary, will use it in different ways. Theoretically this is justified as an aspect of a theory that can affect the meaning of terms. Thus there are no neutral definitions of words shared by different theories and it is extremely difficult for proponents of one paradigm to really understand what the proponents of another are trying to say (2) observations are not neutral. What is observed depends to a large degree on the theoretical commitments of the observer. Theories also provide the categories in terms of which observations are classified and thus what is seen. According to Kuhn's incommensurability principle the positivist ideal of theory choice is a situation in which two competing theories make conflicting observational predictions, an experiment is performed and one theory wins the day while the other (s) is refuted. Kuhn contends that things are never this simple. Often different theories handle the same sets of observations but with totally opposing and different interpretations; (3) criteria for theory choice, are not neutral. There are general criteria for theory choice on which nearly everyone can agree like simplicity, scope, coherence, consistency and so on which may be interpreted differently 4) the world is not neutral.

Arguably, the most radical is Kuhn's principle of incommensurability. He suggests that scientists committed to different paradigms "live in different worlds". He shares with Kant the idea that the real world (the 'thing-in-itself') is unknowable and is partly constructed by our categories and concepts. Put another way, the world we experience and live in is changed when our theories change.

For Kuhn, scientific revolutions occur during those periods where at least two paradigms co-exist, one traditional and at least one new. The paradigms are incommensurable, as are the concepts used to understand and explain basic facts and beliefs. The two groups live in different worlds. The movement from the old to a new paradigm he calls a *paradigm shift* which is the movement from one paradigm to another. When a transition from a former to an alternate paradigm is complete, the profession changes its view of the field of study, its methods and its goals. In a work published in 1965, Margaret Mastermind points out twenty two different senses in which the words paradigm shift is used by Kuhn (Quoted in Khan, 2002: 6). These have been reduced to three by Haider Khan (a) paradigm as 'a sociological construction' implies when enough people in a scientific community accept it as a frame of reference for problem-solving activities. In such formulation claims of the truth is relative to the paradigm (b) paradigm as an exemplar or artefact is close to the idea of scientific training as an apprenticeship. In experimental sciences methods of research are taught by example (c) paradigm as theory is equivalent to the term 'model'. Khan considers the term paradigm 'a slippery concept' (ibid: 6) and avoids using it at all. In stead he prefers to use 'model'. In this study the term paradigm is used in all these three senses of the word as proposed by Khan. It is a mental model (Kuhn used the word 'map') of thinking about something, with its own values, assumptions, beliefs and expectations and is a response to various changes in society. The 'critical mass' of intellectuals and academics espouse it. The majority of practitioners demand shifts in thinking and it is a guide or map to action.

2.3.4 Term: Critical theory

Much of contemporary social theory rejects the assumption that the world is knowable objectively and instead argues that knowledge is generated out of a complex process involving social, political and cultural factors (Schon, 1971; Kingdon, 1995). Critical theory is a term denoting a set of several alternative paradigms, including neo-Marxism, feminism, materialism and participatory inquiry (Guba & Lincoln in Denzin & Lincoln, (eds) 1994:202). Although it is difficult to define its boundaries or its origins, advocates of critical theory agree that it is informed by post-modern post-industrial theory, which are rooted in neo-Marxism. Indeed, the term seems to have been first used by the Frankfurt School to describe their own work and based upon the use of the *critique* as a method of investigation. For the purposes of this study the concept of critical theory sets out to critique and suggest changes to institutions. Its goal is explicitly evaluative and interpretive. It is further characterised as having the propensity to see conflicting knowledge and the need to understand the complex ways in which knowledge can find its way into policies, learning programmes and research. Critical theory compels us to ask questions that are deeply laden with social and political power such as who constructs, defines, and controls knowledge? Whose knowledge is valued? Who benefits? (Cowen, 2000: 333-342; McNeill, 2000). A major focus of critical theory is on specific ways that institutions are used to shape identities, dictating what is acceptable within a culture, offering privilege to some, and marginalizing or denying others. Critical theory looks at the mechanics of this process of privilege and marginalization and alternatively of access and inclusion and often thinks about the possibility of political action against the former.

2.4 THEORIES OF KNOWLEDGE

2.4.1 Introduction

Human action is ultimately dependent on the creation, generation, distribution and application of knowledge. In this sense human society has always been based on knowledge production and reproduction. "Knowledge has been important to production across all historical epochs; in the most basic sense labor is human creativity, mediated by knowledge and applied to the material world" (Curry, 1997:

1). There remain major differences in the ways that knowledge is understood among social theorists. Neo-marxist, post-industrial, 'academic capitalism' and post-modernist theories are all markers both of developments in education and in theorizing about education (Apple, & Carlson, (eds) 1998: 1). The current dominant institutional forms are increasingly being challenged by alternative schools of thought whose thinking raise fundamental philosophical challenges, offer alternative theoretical, methodological and practical approaches to knowledge production in research, learning and teaching. These alternatives have garnered enhanced interest partly because they address socio-economic and political issues. I do not go into detailed discussions of these theories but simply point out three or four salient features that seem important to me in the context of theory-building today.

2.4.2 Neo-Marxism

The foremost representative of neo-Marxist theory was the Frankfurt School that believed in the continuing viability of a self-revising Marxism. They believed that some of Marx's followers had come to parrot a narrow selection of Marx's ideas, usually in defence of orthodox Communist Parties. Theorists in the school were intensely influenced by the failure of working-class revolutions in Western Europe, the rise of fascism and nazism before and after the Second World War in the industrialised world and took up the task of choosing what parts of Marx's thought might serve to clarify social conditions which Marx himself had not foreseen. The school's work centred around two main themes, analyses of structural changes in the labour process under capitalism and the re-examination of the foundation of critical theory. They recognised that the structure of capitalism and history had changed decisively, that the modes of oppression operated differently and that the industrial working class no longer remained the determinate negation of capitalism. Thus they drew on other schools of thought to fill in Marx's perceived omissions such as the 'Dependency School' with thinkers such as Andre Gunder Frank (1989:), the 'World Systems' school associated with Immanuel Wallerstein (1974; 1988), works on radical political economy by Samuel Bowles and Herbert Gintis

(1976/ 2002) and the theory of imperialism and centre-periphery dependency in the developing world proposed by Baran (1957) and Paul Sweezy (1966).

Neo-Marxism restates the analysis of society in structural and class terms. The analytically distinguishing feature of neo-Marxism is its emphasis on the social and class relations between individuals in the production of their existence. These relations include relations between the individual and society, between groups within a society and between societies over space and time. For neo-Marxists the most essential aspect of social relations is the control over productive forces and resources, the social means of production and the means created by labour for the further working of nature as a means of production. The control of the means of production and of labour itself creates the fundamental social cleavage between those who control and those who perform the labour. The neo-Marxist term for the extraction of unrewarded surplus labour time is exploitation and its central tenet is that class systems involve the exploitation of labour, accompanied by the extraction of social surplus. "If value is the product of labour and its measure the amount of time necessarily spent working, if the ability to work is also valued on the same basis and if equal values exchange then the fact that workers are not in control of their product or of the productive apparatus and are therefore bound to exchange their ability to work more or less at its value, provides both the regular hidden tax mechanism and its legitimacy" (Kidron, 1974: 14-15). Instead of being paid in relation to their degree of connection with the means of production, workers are underpaid in the same degree. Through its emphasis on class, the neo-Marxists imitate the classical Marxist argument that 'the ideas of the ruling class are in every epoch the ideas of the ruling class'. That is, the class which is the ruling material force of society is at the same time its ruling intellectual force. The class which has the means of material production at its disposal has control at the same time over the means of mental production, so that generally speaking, the ideas of those who lack the means of mental production are subject to it.

By placing labour at the heart of the study of society and of history the neo-Marxist position of praxis is aimed at the unity of the working class which is the only condition

for hope, peace, prosperity and a more humane world order. Drawing on the idea of partial withdrawal from the global capitalist economy neo-Marxism restates the analysis in structural and class terms and proposes that industrialisation be used directly to transform the material conditions of the mass of working class rather than as a new way of integrating a developing country into the international and globalised division of labour.

The related 'dependency theory' posits the thesis of the 'development of underdevelopment' of the 'Third World' in which industrialisation is considered one more way of extracting surplus value from these latter countries, for example through eternal debt repayments, unequal trade relations and structural adjustments. Industrial development is to be captured and spearheaded by the people of the developing countries themselves via an indigenous technology. Such a process has to be owned collectively and organised democratically by the workers involved. These represent the sources of the transformation of the conditions of existence and growth. In South Africa today, there is renewed interest in the theories presented by these schools (Mahoney, (ed) -forthcoming) thus creating new spaces for scholars to formulate new theories and variants of old and existing theories.

While classical Marxist theories see the process of industrialisation as unproblematic and inevitable, neo-Marxists share the belief that industry and progress are essentially connected and further argue that the social and spatial relations that control the industrialisation process must be considered. Industrialisation by itself has negative consequences for the workers and other citizens, is limited in its transformative effects on the rest of the economy and is restricted to its rate of growth and geographic area of influence. In this localised view, industrialisation under globalisation does not afford the potential for global transformation, thus progress cannot be measured globally.

2.4.3 Post Industrialism

The structural trends in contemporary society and the implications of these have been the subject of studies from many different perspectives. Commentators of the 1970s' speak of the rise of the post-industrial society, summed up as a way to "identify a new principle, the codification of theoretical knowledge, which was reshaping the relation of science to technology and of innovation to social change" (Bell, 1980: xv). Bell describes the transition in terms of a schema emphasising the shift from manufacturing services to predominantly financial services, from skilled production workers to other professional workers, from present-oriented empiricism to future-oriented abstraction and from energy to information as the main technology (Ibid: 117). The key to the competitiveness of such societies lies in knowledge and the capacity of individuals and groups to use it effectively. Meaningful and purposeful knowledge is not restricted to the objectified knowledge of scientific rationality. Constructivist and dynamic forms of knowledge produced in action, through experience and in network environments will gain effectiveness in complex and fast-changing problem-solving contexts.

'Post-industrial' designates a radical new relationship between science and technology and public policy. It is primarily a knowledge and information society. This new society is denoted by the "centrality of theoretical knowledge as the source of innovation", the codification of this knowledge and the rise of a new 'intellectual technology' that has succeeded the 'old' machine technology (Ibid: 236-237). According to Bell's thesis post-industrialism is based on the premises that the labour theory of value (see neo-Marxism above) has been succeeded by 'a knowledge theory of value' as the central character of society. The concepts of 'knowledge society' and 'knowledge economy' (Hodges & Burchell 2003: 1) gained particular currency in the 1970s' in developed countries. In this perspective the chief protagonists in society are the 'knowledge workers' who hold the key means of production, the knowledge, in their head (Drucker, 1993). As the industrial working class is shrinking, the value-added components in national income are due, increasingly, to the contribution of knowledge workers. Bell has added an important qualification in this context that "no

single person, no single set of work groups, no corporation can monopolize or patent theoretical knowledge, or draw unique product advantage from it. It is a common property of the intellectual world" (Ibid: 237-238). The second premise is that the post-industrial society comprises science-based industries that are capital-saving in that the next additional units of capital are fewer than the previous ones while creating increased output (Ibid: 238). A third premise is that of automation through the so-called computers-on-chip, produced cheaply yet able to control and regulate on a large scale and which makes possible decentralisation of work and of industrial structures. Extrapolating from his thesis, Bell foresees the rise of a 'four-tiered class system, a class of professional and technical and managerial employees in economic enterprises, government, universities, a class of semi-skilled white collar employees in clerical tasks, sales, insurance, banks and such like, a class of skilled workers - the technicians and a class of unskilled workers, the 'structurally unemployed' for whom increasingly, there would be little place in the new society (Ibid: 239-240). Knowledge production cannot survive unchanged in this context and must be fitted into the new channels of information technology and anything in the constituted body of knowledge that is not converted in this way will be abandoned and the direction of the new research will be dictated by the possibility of its eventual results being translatable into computer language in the new post-industrial social order (Lyotard, 1984 (1979): chapter 5).

2.4.4. Academic Capitalism

Academic capitalism as a theory is derived from the effect on higher education on the changes in political-economic and social relations which have been characterised as globalisation (Slaughter and Leslie, 1997; Gibbons et al, 1994). These developments have given rise to the concept of the 'entrepreneurial' or 'market' university (Slaughter and Leslie, 1997; Tierney, 1997) while the epistemological and organizational forms of knowledge production and distribution have changed, as well as the role of the state in relation to higher education (Subotzky, 1998, 2000; Kraak, 1997; Scott, 1997).

By using academic capitalism as our central concept, we define the reality of the nascent environment of public research universities, an environment full of contradictions, in which faculty and professional staff expend their human capital stocks increasingly in competitive situations. In these situations, university employees are employed simultaneously by the public sector and are increasingly autonomous from it. They are academics who act as capitalists from within the public sector; they are state-subsidized entrepreneurs (Slaughter, & Leslie, 1997: 9).

The theory is closely linked to the theory of 'human capital' (Ibid: 10) which was popular in the 1960s and is based on the premise that there is a positive correlation between education and economic growth. Education and training is an investment for a country in which learners and workers are value - added products and the means by which an economy grows. Consequently, education and training are transformed into a panacea for poor economic performance (Chisholm, 1994:4). The theory of human capital is heavily criticised by the dependency theorists, Marxists and neo-Marxists which is the cause of its fall into disrepute after the 1970s.

As a current neo-liberal theory, 'academic capitalism' is appreciated by both left and right sections of societies. The very use of terms such as 'entrepreneurial', 'market', 'economic interests', so central to academic capitalism are also popularly used by trade unionists (Cosatu, 1992). These terms have important implications for higher education. The influence of the corporate world, the changing role of the state and alternative sources of funding, all lead to changes in the governance and control of higher education. In a bold response to the world-wide uncertainty in the higher education sector, Clark, a foremost proponent of the theory of academic capitalism, investigates five universities in five Europe countries that have made efforts in the 1980s' and 1990s' to remain viable. "With the complexity and uncertainty now endemic, no one knows with any degree of confidence what the twenty-first century holds in store for universities. How then to proceed? One answer stands out to, step by step, learn by experimenting. We need widespread experimentation that tests ways to move into the future. We need particularly to learn from efforts to innovate in the overall character of universities" (Clark, 1998: xiv). For Clark the short answer to the

uncertainty, lack of confidence and complexities in the worldwide higher education sector, is the creation of and transformation into entrepreneurial universities. Universities must "become more enterprising, even aggressively entrepreneurial" (Ibid: xiv) in their organization and in their production of knowledge. An entrepreneurial university:

seeks to work out a substantial shift in organizational character so as to strive at a more promising posture for the future...(they) ...seek to become 'stand-up' universities that are significant actors on their own terms (and) ...transformation occurs when a number of individuals come together in university basic units and across a university over a number of years to change, by means of organized initiative, how the institution is structured and oriented (Ibid: 4).

Clark singles out five constitutive elements of an 'entrepreneurial university'. They are (a) a strengthened steering core that embraces central managerial groups and academic units, reconciling new managerial values with traditional academic ones at the level of operations, (b) an expanded developmental periphery means reaching across university boundaries to linking up with outside organizations and groups, (c) a diversified funding base is necessitated by decreased state funding and setting out to compete for grants and contracts (d) a stimulated academic heartland, while remaining disciplined-based, extends itself by encompassing some interdisciplinary fields of study; (e) an integrated entrepreneurial culture embraces change and internalises it into a university wide culture (ibid: 5-8).

Entrepreneurial universities are functioning increasingly as 'market-like' organisations as is demonstrated in important indicators. These are policies that target applied research, the decrease in block grants and the increase in faculty engagement with industry and the market (Slaughter and Leslie, 1997: 19-20). An important disjuncture has occurred in universities, rooted in the fact that demands on them outrun their capacity to respond. The scope and scale of the contemporary knowledge base is illustrated by the volume and diversity of students, the demands from industries and government and the sheer expansion of knowledge spurred on by information technologies (Clark, 1998: 129-130). At an epistemological level, academic capitalism supports the traditional assumption in higher education that

knowledge is the accumulation of facts around a common intellectual discourse. Indeed, Clark takes as his point of departure a community of scientists who speak 'the same language', and are found in neutral, singular and relatively insulated faculties from whence knowledge is advanced. "The disciplines can readily be seen as primary. They, rather than the institution, tend to become the dominant force in the working lives of academics" (Clark, 1983: 40). Such an assertion by Clark is premised on at least two core beliefs, the subject matter of a discipline reflects neutral categories that have accumulated over time and that the advancement of knowledge is accretionary through the empirical work of scientists. The changes in the form and distribution of knowledge involve the commodification of knowledge, the shift towards Mode 2 knowledge, new forms of quality and evaluation including performance systems, emphasis on technology and natural science fields, technology transfer through partnerships and consortia and the fragmentation of teaching and research.

The answer to the question of what knowledge is projected in a national knowledge policy assumes that the response is the same for all institutions throughout the world, or that scientists anywhere in the world can devise solutions for any particular country. The defining obligations are objectivity and the evaluation by peers in that country. "The inherent strengths of university research are in theory related to the intersection of discipline and institution. Scientists in their research roles are oriented more toward their peers in the scientific community, rather than their bureaucratic superiors in their institution" (Geiger quoted in Kempfer & Tierney (eds.) 1996: 14). Academic capitalists place the 'financial sustainability' of institutions ahead of social reform and transformation (Clark, 1995a).

2.4.5 Post-modernism

It is generally agreed that in the last three decades there have been fundamental challenges to modern forms of thought. These challenges are depicted under the rubric of post-modernism which challenges 'the project of modernity'. "The project of modernity formulated in the eighteenth century by the philosophers of the Enlightenment consisted in their efforts to develop objective science, universal morality and law, and autonomous art according to their inner logic. At the same time, this project intended to release the

cognitive potentials of each of their domains form their esoteric forms. The Enlightenment philosophers wanted to utilize this accumulation of specialized culture for the enrichment of everyday life- that is to say, for the rational organization of everyday social life" (Habermas quoted in Mourad, 1997: 2). While a modernist such as Habermas tries to reform the modern project, post-modernists attempt to move the intellectual discourse and expression out of the modern. Since the critiques embedded in post-modern thought challenge the status quo in higher education and the role of institutions in this sector of society, it is important to examine the significance of post-modern views.

The unity of the study as a whole is located in its aspiration to link the theory of a 'culturally contextualized critical post-modernism in late capitalism' to knowledge production. A response to post-modernism is best exemplified by Habermas in his statement that "we must hold fast to the intentions of the Enlightenment...or give up the project of modernity as lost" (Habermas, 1987: 326-327). This is replicated in various ways in the theory of 'late capitalism'. The theoretical possibilities and limitations of post-modernism make it necessary to devote a separate section on it in this chapter.

Post-modernism has developed from a confluence of intellectual, aesthetic and cultural currents on the one hand, and on the other from political, socio-economic, institutional and organizational flows (Scott, 1997: 17). It stands today as the most important paradigmatic change of the past half-century. Its 'multiple genealogy' (Laclau, 1993: 336) can be traced back to the late nineteenth century and the collapse of the Modern Project. The latter's emphasis on a theory of reason and a single truth that transcends social, cultural or institutional situations and that marginalises key differences of gender, culture and race is critically questioned as well as its meta-narratives (would-be ideals). The untold stories that unify and totalise the world and justify a dominant (hegemonic) culture's power structures, are rejected by post-modernists. "Postmodernism tends to be used in three broad senses: as a term to designate the cultural epoch through which we are livingas an aesthetic practice...and as a development of thought which represents a thorough-going critique of the assumptions of Enlightenment or the discourses of modernity....." (Waugh (ed) 1992: 3). As a cultural movement, post-modernism predates its first identification as a theoretical discipline in the 1980s'. Culturally it arose

out of the rejection of the so-called 'international style' in architecture and the arts and the wider associated intellectual currents. It rejects the canon of modernism that function must determine form, consciously encourages eclecticism and deliberately mixes-and-matches different styles. The aesthetic inspires these aims to amalgamate the professional and popular, high art and low art in a pattern or trend of incongruity and non-synthesis. The post-modernist world is unruly, amoral and even confusing in its undermining of those uncritically conventions that govern our view of space, time and form (Laclau, 1993: 338). Some post-modernist assumptions include distinctions between post-modernism and modernism, its absolute explanations of social phenomena, the idea that inquiry can yield a permanent, objective, self-justifying foundation to guide human thought and action. Knowledge is determined or conditioned by the social rules that govern discourse and by a general emphasis on the centrality of abstract culture and its nihilism is evidenced in the wholesale levelling of all intellectual and moral distinctions (Mourad, 1997). The distinctive features of post-modernism for philosophical critique are, questioning of the efficacy of the assumption that the organised pursuit of progress toward desirable aims that originate in the past, and its' responses to theoretical deficiencies in discourse which require a rethinking of the nature and aims of inquiry. It is concerned with encouraging intellects to pursue important ideas besides the idea that reality is composed of things to know. It is not limited to the discipline of philosophy or to any other discipline and implies that the very idea of disciplines is an unduly constraining condition on intellectual capacity. Post-modernism rejects the idea that desirable social change is conceptualised and necessarily pursued as social progress as well as the idea that forms of human knowledge, social organization and creative expression are progressively improved over time. In 'A Report on Knowledge' by Jean Francois Lyotard (1984), the 'post-modern condition' is hypothesised as a stage in the history of humanity when "the status of knowledge is altered as societies enter what is known as the post-industrial age and cultures enter what is known as the postmodern age" (Lyotard, 1984: 3). Lyotard describes 'modern' as "any science that legitimates itself with reference to a metadiscourse, making an explicit appeal to some grand narrative, such as the dialectics of the Spirit, the hermeneutics of meaning, the emancipation of the rational or working subject or the creation of wealth" (Ibid: xxiii). Post-modern describes the

state of knowledge and the problem of its legitimation in the most developed countries. "I interpret postmodern thought as reflecting a fundamental concern for expanding the meaning, possibilities and purposes of what counts as legitimate scholarly inquiry" (Mourad, 1997: 4). Since a fundamental concern of higher education is the pursuit of knowledge, and since post-modern philosophers take positions on knowledge that are intended to have broad implications for intellectual and social life, an analysis of these positions in the context of inquiry provides a means of eliciting the potential significance of post-modern thought in a way that goes well beyond an exploration of its presence within the confines of a particular discipline. "Education as a cultural pedagogical practice takes place across multiple sites, which include not only schools and universities but also the mass media, popular culture and other public spheres, and signals how within diverse contexts, education makes us both subjects and subject to relations of power". (Mourad, 1997: xi)

Post-modern theorists such as Lyotard, concern themselves most fundamentally with an attack on positivistic, macro phenomenal theory, the construction of 'grand theories' that necessarily dismiss the naturally existing 'chaos and disorder' of the universe. In its 'incredulity toward metanarratives' view, post-modernism describes the latter as 'dogmatic' 'terroristic' and violent (Lyotard, 1984: 6) and has subverted the authority of the meta-narratives of Modernism through its recognition of the reality of fragmentation, consumerism, and local contexts (deconstruction.). By deconstructing the Modern Project into 'small narratives' (ibid.) the new social movements of today reject the classical definition of class through transcending ideology and the representation of new forms of the challenge to oppressions. The word 'transformation' is used by Lyotard to refer to the effects of modern technology over the last five decades of the twentieth century and its impact on learning and research with the emphasis on language-related developments like linguistics, cybernetics, informatics, computer languages, telematics (Ibid: 4 -5).

In providing a critique of positivism and macro theory, post-modernism has established an intellectual tradition that has challenged a variety of intellectual viewpoints, most notably neo-Marxism. By arguing for subjectivism and micro sociological analysis, leading post-modern thinkers have instituted a theoretical and

practical shift away from grand theories. Among post-modernism's key themes are a growing emphasis on complexity and the specifics of context, both temporal and spatial.

Post-modernists argue for the existence of a multiplicity of theoretical standpoints, addressing the relationship of the individual to the phenomenon, rather than trying to place either into a broader schema. In this way, post-modernist thought emphasises the necessity of micro theory, dealing with the nature of 'difference', rather than holistic macro theory and tends to embrace fluid and multiple perspectives, eclecticism, irony, the breaking of barriers, the reversal of roles, and the conflation of opposites. Given a choice between two dichotomous ideals, works of post-modernism tend to emphasise the ideal. They favour matter over mind, machine over man, writing over speech, form over substance and feminine over masculine and localism over globalism. It celebrates 'difference, multiplicity, variety, diversity within and between human beings and the social practices they engage in' (Griffen, 1997: 6). Such volatility ensures only 'ephemeral discourses'. "The temporary contract is in practice supplanting permanent institutions in the professional, emotional, sexual, cultural and family domains, as well as in political affairs" (Lyotard, 1984: 66).

The influence of this deconstruction is visible in the plurality and the absence of universal categories of 'women' (Hassim, 2004; Lemmer, 1994) and various hybrids of movements for racial equality, feminist rights and gay rights in the current anti-globalisation movement. Adherents of these movements often work in concert, even though they come from a diversity of backgrounds, varied and sometimes opposing, understandings of processes and possess alternative visions, strategies and tactics. None of these entirely embrace all aspects of the post-modern movement, but reflect or borrow from some of its core ideas. "By remaining implacably opposed to fixed and universal principles of meaning and value, post-modernism has encouraged the rise of a whole variety of cultural and political practices that promote diversity and improvement..." (Fuery & Mansfield, 1997: 111).

Some of the questions posed by post-modernists are, 'Is it classes or social movements that constitute the fundamental agents of historical change? Is the working class in the process of disappearing? "The plurality of current social struggles, emerging in a radically different and more complex world than could have been conceived in the nineteenth century, entails the necessity of breaking with the provincial myth of the 'universal class" (Jameson, in Docherty (ed) 1993: 64). In its pluralistic attitude the subject is increasingly seen to be traversed by all manner of different power configurations and questions of gender and sexuality, the environment. Gay rights have been placed at the core of contemporary political debate. In contrast to the all-encompassing frameworks for action or belief, so important in the Modern Project, the emphasis is on local and small-scale phenomena. Critical post-modernists also point out that the proliferation of information technology is leading to the creation of entirely new sets of spatial, cultural and social relations (Jameson, 2001). They propose that the logic of capitalist development has not moved in the direction that Marx predicted and the participation of the working class in the democratic political system has led to its integration within that system (Sorel, quoted in Laclau, 1993: 338). This weakens the logic of capital as the foundation of History and produces the concomitant effect of showing that the social identity of the working class is vulnerable to the new system of relations by virtue of that class's very political participation in the system (ibid.). In contrast to neo-Marxism post-modernism sees class as only one determinant among many in the construction of political locatedness for the subject whose freedom or emancipation depends less on a monolithic struggle against a single force of oppression and more upon a diversity of struggles and strategies (Laclau, 1993: 329-343).

Post-modernists are primarily characterised by their insistence that social theory must play a role in changing the world. This is an attempt to elaborate on the idea of theory with practical intent. Post-modernist researchers attempt to become actively engaged in promoting social change within the education system and the culture itself. They seek to promote change by 'becoming part of the self-consciousness of oppressed social groups' (Hoy and McCarthy, 1994). The burgeoning anti-establishment movements of the 1960s' as epitomised by '1968 in Paris', are considered the earliest indication of such a trend of

protest that seemed to have 'appropriated' the hegemony from Marxist and neo-Marxist ideology.

2.4.5.1 Challenges to Post-modernism

All approaches to knowledge over the last fifty years or so have been directly or indirectly influenced by theories of post-modernism. In the present period of intellectual uncertainty and ambiguity the celebrated relativity of post-modernism does not guide satisfactorily. Interest in alternative paradigms has been stimulated by a growing dissatisfaction with the conventional post-modernist theories which do not seem able to answer the questions in the context of the new world order of globalisation. At the same time the new state of the world is nowhere more strikingly illustrated by both post-modernist and globalised symbols in the developing world than by rural women carrying huge buckets of water on their heads and using one free hand to talk on a cell-phone and the other to drink a can of Coca-Cola.

Post-modernism's denial of the values of societal critique as espoused by Modernity has placed limitations on its explanatory potential of contemporary society. Yet, "postmodernity does not imply a change in the values of Enlightenment modernity but rather a particular weakening of their absolutist character... We need to bear in mind that the multiple traditions in education have roots within modern culture just as much as the conservative economic models of education do. Rather than abandoning these traditions as outdated, we need to revisit them consistent with new theoretical insights and in light of current cultural developments." (Laclau, 1993: 332). An authoritative analysis seems to elude us, as Marx says 'all that is solid melts into air'.

The inability to relate social phenomena to material circumstance limits the ability of post-modernism to describe social patterns. While post-modernists ultimately identify elements that exist throughout society such as differing perspectives, hegemony and social texts, they fail to identify principles to explain either their meaning or their ubiquity. Its, 'beyond ideology' of the 1950s' has been negated by its own ideological mission of demonstrating "...that the new social formation (s)... no longer obeys the

laws of classical capitalism, namely the primacy of industrial production and the omnipresence of class struggle” (Jameson, in Docherty (ed) 1993: 63-64).

The real challenge of post-modernism is to re-conceptualise the relationship between education and democracy in a manner that takes into account capitalist insights (Carr, 1995b: 79-80) and the propensity to ‘deconstruct the deconstruction’ of modernism (Scott 1997: 14-22). Thus critical post-modernists such as Jameson, Tierney, Subotzky and others, place a high premium on structural issues, on culture and on the specificities of countries and their theories issue a direct challenge to post-modernism in a globalised world.

2.4.5.2 THE THEORY OF FREDERIC JAMESON

Since the concept of ‘late capitalism’ is central to the theses propounded by Frederic Jameson, I begin by looking at the ideas of the progenitor of the concept, Ernest Mandel who extends classical Marxist theory that deals with post-industrial society. He argues that the realities of modern industrial practice permeate every social sphere, reshaping the context in which capitalism is understood. In his book *Late Capitalism*, Mandel criticises his own *Marxist Economic Theory* for its "exaggeratedly descriptive character," and for its "too small effort to explain the contemporary history of capitalism", (Mandel, 1975: 8). He poses the question: 'Why is there still no satisfactory history of capitalism as a function of the inner laws of capital ... and still less a satisfactory explanation of the new stage in the history of capitalism which clearly began after the Second World war?' (Mandel 1975: 23) Up to now, according to Mandel, the relationship between the laws of motion and the history of capitalism has not been satisfactorily explained. He comes to the conclusion that "...our explanation of the history of the capitalist mode of production is only possible through a mediation between the laws of motion of 'capital in general' and the concrete forms of appearance of the 'many capitals'" (ibid: 8-9). The contemporary concrete form of appearance Mandel then condenses into the concept of ‘late capitalism’. He distinguishes three main periods or phases of capitalist development. "The early capitalist era of free competition" was "characterised by a relative

international immobility of capital . . . above all because there were not as yet any critical limits to the expansion of capital accumulation on the home market. . ." (ibid: 312-313). Then follows "the classical era of imperialism," in which "the concentration of capital became increasingly international in character" (Ibid: 313). This is succeeded by 'late capitalism,' in which "the multinational company becomes the determinant organizational form of big capital" and the contemporary forces of production are bursting through the framework of the nation state, for the minimum threshold of profitability involves output series commensurate with the markets of several countries" (Ibid.: 316).

Far from representing a postindustrial society, late capitalism constitutes generalized universal industrialization for the first time in history. Mechanization, standardization, overspecialization and parcellization of labor, which in the past determined only the realm of commodity production in actual industry, now penetrate into all sectors of social life. It is characteristic of late capitalism that agriculture is step by step becoming just as industrialized as industry, the sphere of circulation just as much as the sphere of production, and recreation just as much as the organisation of work (Mandel, 1978: 387).

In 'late capitalism' the share of the underdeveloped countries in world trade is declining so that they are becoming poorer in comparison with the imperialist nations. As Mandel explains it, the imperialist countries depend on the raw materials of the underdeveloped countries and on the decline in their prices, which leads to a relative decline in the value of those raw materials. But since, according to Mandel, the share of the underdeveloped countries in world trade is diminishing, this must express imperialism's decreasing dependence on the raw materials of the poor nations, which leads to the drop in their prices and provides a different context for the growth of domestic economies and the concomitant struggle for economic progress.

- **Dialectics of culture**

Jameson presents his theory through four paradoxes or antinomies of post-modern thought. These are found in the theoretical impasse of the latter that remains unsolvable at the level of abstraction of time and space, subject and object, nature and human nature and the idea of progress and degeneration. Through these antinomies he shows how dialectical contradictions work in the contemporary (post-modern 'late capitalism') period. With his antinomies and through ".....a mass of logical paradoxes and unresolvable conceptual paralogsms", Jameson ignores "....the discontinuities of separate opinions and positions and searches out crucial points at which even opposing positions seem to share a common conceptual dilemma" (Ibid: xiii).

In his 1982 essay *'The Politics of Theory'*, Jameson makes the observation that culturally something has changed in the world which has to be accounted for. Everything that we have been calling post-modernism is inseparable from, and unthinkable without the hypothesis of some fundamental mutation in the sphere of culture in the world of 'late capitalism' which includes a momentous modification of its social function (Jameson, 1982: 47-48). He suggests the possibility of a way through the impasse of the two most influential strains of thought emerging at that time in relation to post-modernism. On the one hand, one encounters an uncritical celebration of the concept by the post-modernists themselves, and, on the other, a charge of cultural degeneracy is being levelled by critical post-modernists and older modernists. Jameson asserts that to repudiate the cultural change is facile and to thoughtlessly celebrate it is complacent and corrupt. "The point is that we are within the culture of post-modernism to the point where its facile repudiation is impossible and any equally facile celebration of it is complacent and corrupt" (Jameson, 1988: 111). Jameson grasps the relationship in post-modernism as a cultural phenomenon and the system of capitalism as one that is under-theorised. In his attempt to theorise this change and inaugurate a way forward for political struggle, Jameson attempts to grasp this cultural dominant dialectically (Jameson, 1982: 112). In his celebrated *The Seeds of Time* (1994), he insists that Post-modern be captured, not as a "style but rather as a cultural dominant" (Jameson, 1992: 4) while a dialectical approach

to culture negates 'complacency'. Culture in post-modernism becomes, in terms of Jameson's theory, inseparable from the sphere of capital. "Everything that we have been calling post-modernism, is inseparable from and unthinkable without the hypothesis of some fundamental mutation in the sphere of culture in the world of 'late capitalism', which includes a momentous modification of its social function" (Jameson, 1992: 47-48). His insistence on post-modernism as culturally dominant allows him to assert that it arises *before* the assumption of post-modernism as style or aesthetic. What is required is an assessment of this new cultural production within the working hypothesis of a general modification of culture itself within the social restructuring of 'late capitalism' as a system. "In place of the temptation either to denounce the complacencies of postmodernism as some final symptom of decadence, or to salute the new forms of the harbingers of a new technological and technocratic Utopia, it seems more appropriate to assess the new cultural production within the working hypothesis of a general modification of culture itself within the social restructuring of late capitalism as a system" (Jameson, 1988: 111).

Post-modern temporality and spatiality are marked by a fundamental paradox. Its temporality is characterised by an accelerated rate of change, a diversity of contemporary urban life, the turn-over of fashions, life styles and beliefs over the last two to three decades. What is unusual about this is that it appears to be change without real transformation. Temporality has become essentially spatial (Jameson, 1994: 21). "Space does not seem to require a temporal expression; if it is not what absolutely does without such temporal figurality, then at the very least it might be said that space is what represses temporality and temporal figurality absolutely, to the benefit of other figures and codes" (Ibid.). We simultaneously experience an unprecedented rate of change and a complete standardisation of the life which is incompatible with any form of mutability. Contrary to post-modernism's celebration of difference, heterogeneity and radical otherness, social life has never been so standardised and "the stream of human, social, and historical temporality has never flowed quite so homogeneously" (Ibid: 17). As Jameson puts it, we are in a situation in which the sheer momentum of change slides into its opposite, into *stasis*. The deeper logic of post-modernism is that whilst everything is

submitted to the change of fashion, the image and the media, nothing fundamentally can change any longer and we are faced with the monotony of absolute dispersion and absolute difference. He makes a distinction between change within the system and change of the system itself. In terms of individual experience one can almost daily change one's life, but at a deeper structural level we appear to be unable to imagine change at all. The solution to this space-time paradox lies in the realization that each system or 'mode of production' produces a temporality that is specific to it. It is only Jameson asserts, "...if we adopt a Kantian and ahistorical view of time as some absolute and empty category that the peculiarly repetitive temporality of our system can become and object of puzzlement and lead to the reformulation of these old logical and ontological paradoxes" (Jameson, 1994:16). Humanity, Jameson asserts, has lost the ability to think historically, history lies outside our reach. The loss of history is accompanied by a loss of any notion of temporality, causing a shift in emphasis towards the spatial and the attendant heterogeneity which that implies. The subject has lost its capacity to extend its pro-tensions and re-tensions across the temporal manifold and to organise its past and future into coherent experience. (1992: 25). Thus he insists on the need for the 'historical imagination' which makes possible an explication of the post-modern as the 'logic of capitalism'.

- **Post-modernism as the logic of capitalism**

'Late capitalism' does not present us with a radically new system or life world and this is the cue for Frederic Jameson's theory of post-modernism as the 'cultural logic of late capitalism' (1992: 4). For Jameson post-modernism is both a product and cause of 'late capitalism'. That which causes the post-modern, that is, 'late capitalism' has become the post-modern. As a micro theoretical construct, post-modernism is a means for describing in more detail phenomena which stem from macro theoretical concerns. Following on Mandel, Jameson's thesis of 'late capitalism' attempts to answer the two theoretical questions spawned by debates about post-modernism: the concept of post-modernism and the theoretical impasse posed by it. To sum up here, the uses of the term that emerged in the 1980s' are firstly as cultural category, derived from debates in architecture, arts and literature; secondly it concerns the notion of epistemic transition that coincides with

Lyotard's theory of the end of grand narratives and the impossibility of associating the arts with a macro socio-historical project of human liberation, so characteristic of the Enlightenment. Jameson's use of the concept attempts to incorporate these debates within a more totalizing theory of post-modernism. He continues Mandel's thesis that the realities of modern industrialization have reshaped the context in which capitalism is understood while at the same time attempting to theorise the post-modern in a way which will make it not only 'knowable' but will also inaugurate a way forward for political intervention. To speak of 'late capitalism' "...is necessarily to think in terms of historical periods and to work with models of historical periodization" (Jameson, 1988: 178). It is neither a narrowly cultural concept, nor a global category designating a radical break with the past. His claim that all cultural products are by necessity not political precisely because they have become artefacts under 'late capitalism', immediately commodified and appropriated (Jameson, 1994: 22-25). This reality contributes to the inability of post-modernist theorists to think historically. Traditionally the history of the world has been divided into ancient, medieval and modern. Such an approach is said to have arisen in the late seventeenth century and is concerned at bringing out the distinctiveness achieved by the Age of Reformation as a crucial watershed and a line of demarcation between the old and the new. This periodisation is essentially European in orientation and shows scant understanding of developments in the non-European world. Interestingly, the classical Marxist, materialist conception of history divides the latter into linear phases of primitive accumulation, slavery, feudalism, capitalism and socialism. These phases have become conceptually integrated with the former, with slavery into ancient, feudalism into medieval and capitalism into modern. 'Late capitalism' does not present a radically new system or break with the past but rather a purer form of capitalism, a further intensification of the logic of capitalism, of commodification and reification. 'late capitalism', consumer society, the post-industrial society are still fundamentally the same economic system. In the commodification of life under post-modernism, experience of temporality has been dislocated through the dual effects of the dissolution of the centred subject. Without a coherent or unified sense of the subject it becomes increasingly difficult to speak of temporality in terms of memory, narrative and history. Jameson's interest in post-modern spatiality is its tendency to disrupt traditional conceptions of

space, in its discreditation of the old models of understanding, the hermeneutic of inside and outside, the dialectic of essence and appearance and the constantly deferment of meanings.

Post-modernism stands as a "corresponding cultural style" to post-industrial society, placing it in the historical context of 'late capitalism', rather than as a 'historical rupture'. The waning of collective hope and solidarity leads to the claims of 'the end of ideology', the 'end of history' by post-modernists. At the same time active political categories no longer seem to be those of social class while traditional forms of Marxist theory and practice seem to have entered a 'crisis'. "We must avoid" argues Jameson, adopting "essentially moralising positions" and rather develop a more fully historical and dialectical analysis of the situation (Jameson, 1994: 205). "The prior moment of class consciousness is that of the oppressed classes.....those who must work and produce surplus value for others will necessarily grasp their own solidarity....*before* the dominant or ruling class has any particular incentive for doing so" (Jameson 1981: 289). Class and ideology remain the central features of 'late capitalism'. "...ideological commitment is not first and foremost a matter of moral choice but of taking sides in a struggle between embattled groups. In a fragmented social life - that is essentially in all class societies - the political thrust of the struggle of all groups against each other can never be immediately universal but must always necessarily be focused on the class enemy" (Jameson, 1981: 290).

'Late capitalism' also represents the last wave of capitalist expansion and the last vestiges of non-commodified space are seen in the re-colonisation of the developing world where capitalism transforms its relationship to its colonies from an old-fashioned imperialist control to market penetration (Jameson in Waugh, 1992: 150). "...late capitalism in general (and in the 60s in particular) constitute (sic) a process in which the last surviving internal and external zones of precapitalism - the last vestiges of noncommodified or traditional space within and outside the advanced world - are now ultimately penetrated and colonized in their turn. Late capitalism can therefore be described as the moment

when the last vestiges of Nature which survived on into classical capitalism are at length eliminated: namely the Third World and the unconscious. The 60s will then have been the momentous transformational period when this systemic restructuring takes place on a global scale” (Jameson in Waugh (ed) 1992: 150-151). This process and period is also referred to as multi-nationalism and globalisation.

- **Multi-nationalism**

The theory of ‘late capitalism’ at once acknowledges a further development and restructuring of capitalism on a global scale without positing a radical break with the past. Jameson's use of the term attempts to straddle or incorporate post-modernist debates within a more totalizing theory of post modernity. “...the seeds of the future already exist within the present and must be conceptually disengaged from it, both through analysis and through political praxis” (Jameson, 1988: 111). The temporal paradox is further demonstrated in "the dynamics of the new global system itself" (Jameson, 1994: 19). Theoretically the seemingly distant realities, problems and particularities of the developing world and those of the developed world can conceptually be coherently related (Jameson in Waugh, 1992: 149). Put another way, the developed and developing worlds are integrated through globalisation. The promise to historically situate post-modernism in relation to transformations in the capitalist system and the development of global multi-national capital is probably the single most significant aspect of Jameson's theory. Post-modernism has to be understood and explained both diachronically and synchronically. Nothing but the modern exists in the developing world where modern is rebaptised post-modern since "what we call modern is the consequence of incomplete modernization and must necessarily define itself against a nonmodern residuality that no longer obtains in postmodernity as such - or rather whose absence defines the last.....it is as though what used to be characterized as the Third World has entered the interstices of the First one....." (Jameson, 1994: 20). Time has become space while the latter does not seem to require a temporal expression. Globalisation as "the expansion of capital beyond its earlier limits in its second or "imperialist" stage" sweeps away precapitalist relations (extensive labour, inhuman hours and conditions) and

assimilating them into capitalism itself (Ibid: 27). The transition from nationally based economies to a multi-national economy has been accompanied by a change in both the form of production and regimes of capital accumulation, from Fordist production line methods which entail large factories and long production runs of exactly the same commodity, to post-Fordist forms of production which allow for greater flexibility of both production processes and commodities, as well as greater mobility of capital and production bases. Similarly, capital accumulation has transferred from large-scale investment in infrastructural and capital projects to much more flexible forms of accumulation, for example share speculation, while multi-national corporations spread themselves across the world marketing and packaging themselves according to local tastes and identities. A single standardised global market sells back a "well-nigh Bakhtinian carnival of heterogeneities, of differences, libidinal excitement and a hyperindividuality that effectively decenters the old individual subject by way of individual hyper-consumption" (Jameson, 1994: 31) and a standardised, social reality is celebrated by post-modernists as diversity and otherness. Much of the energy of Jameson's recent writing revolved around the need, to restore a properly Utopian dimension to current cultural and critical practice and to keep alive the ideal of a society that is qualitatively different from the present. It is ironic, remarks Jameson, that whilst we are all too ready to conceive of a complete world ecological crisis we seem to be utterly unable to conceive of a different form of social organisation. For Jameson, then, we must try to detect and retrieve from the remnants of a repressed collective experience, a collective experience that would allow us to once more think the alternative to a global capitalist system (Ibid: 50). The post-modern constitutive features correspond to this third movement of capital namely late or multi-national capitalism. Commodities articulate the subject's relation to its new spatial characteristics and culminate in a new political programme where the 'we' may be grasped within a collective entity and be re-endowed with the ability to act and struggle.

- **Progress and the new economic struggle**

Jameson believes that post-modernism's undermining of Enlightenment values makes a progressive cultural politics and the idea of progress difficult if not impossible. "How can

we effect any change in people's poor living conditions, in inequality and injustice, if we don't accept the validity of underlying universals such as the 'real world' and 'justice' in the first place? How is any progress to be made through a philosophy so profoundly skeptical of the very notion of progress, and of unified perspectives"? (Jameson, 1992: 26). Post-modernism constitutes an `inverted millenarianism in which premonitions of the future, be they redemptive or catastrophic, have been replaced by senses of the end of everything (ideology, social class, welfare state, knowledge and so on (ibid: 1992: 5). "It seems to be easier for us today to imagine the thoroughgoing deterioration of the earth and of nature than the breakdown of late capitalism; perhaps that is due to some breakdown in our imaginations" (Jameson, 1994: xii). "...what is most often conducted as an aesthetic debate is in reality moralizing ones, which seek to develop final judgements on the phenomenon of postmodernism..."(Jameson, 1988: 111). Post-modernism is an ideology, better grasped as a symptom of the deeper structural changes in our society and its culture as a whole (Jameson, 1994: xii). 'late capitalism' serves to correlate the emergence of new formal features in culture with the emergence of a new type of social life and a new economic order (Jameson, 1993: 113). It is through his dialectical `cultural dominant' that Jameson identifies a Utopian conception of culture and a collective impulse towards transformation of `the world order'. This is `the moment of truth' of the post-modern cultural field formulated in a progressive way through internationalism and international solidarity * (Jameson, 1992: 50). Jameson's Utopian conception of culture is the expression of a Utopian and collective impulse that is political.

Footnote: Although Jameson refers to the Trotskyite concept of `permanent revolution' as `trendy rhetoric' his own concept of international solidarity can be correlated positively with the former (see Musson, 2005: chapter 5).

The effectively ideological is also at the same time necessarily Utopian (Jameson, 1981: 286). “Hegemonic or ruling class culture and ideology are Utopian, not in spite of their instrumental function to secure and perpetuate class privilege and power, but rather precisely because that function is also in and of itself the affirmation of collective solidarity” (Jameson, 1981: 291).

Jameson’s analysis concludes that “all class consciousness of whatever type is Utopian insofar as it expresses the unity of a collectivity” (Jameson, 1981: 290-291). At the same time by understating the struggles of localised nationalisms for autonomy and identity Jameson's thesis does not exercise any normative effect on local contexts. The cultural configurations of other critical post-modernists are required to extend the explications provided by Jameson.

2.4.5.3 THE THEORY OF TIERNEY AND KEMPFER

Guided by the critical post-modernism of Giroux that saw ‘a world in which knowledge is used to maintain oppressive relations’ (quoted in Kempner & Tierney, 1996: 3), Tierney and Kempfer frame their investigations into higher education in a cultural perspective that addresses the inherent unequal nature of social reality and proceeds from assumptions that are framed in a cultural perspective and within ‘local social realities’, a framework which has also been described as ‘critical late-modernism’ (Subotzky, 1998: 3). From their anthropological perspective the effects of culture are central to understanding and explaining what and whom are valued and devalued in a society; and how culture both enables and restricts new ways of thinking, transmitting and constructing knowledge (Ibid: 3). “Institutions of higher education are socially constructed realities that in part develop from their own sociocultural histories and traditions.....shaped by the external cultural environment and a nation's place within the ‘international knowledge networks’” (Kempner & Tierney in Kempner & Tierney, 1996: 1). Such a view combines concern for identifying and addressing basic inequalities with

an understanding that key constructs such as knowledge and knowledge production are contingent on ideological and political specificities that comprise the culture of a specific society. In contrast to the traditional view of scientific knowledge that assumes universal validity and objectivity, Tierney & Kempfer provide a "cultural perspective on knowledge production" (Ibid: 15). In higher education this approach focuses on the history and culture of the specific environments in which higher education is situated and how this shapes universities, knowledge production and academic work in national contexts. It is emphasised that while knowledge is dependent on the discipline and profession it "is a social construct dependent upon institutional and national contexts" (Tierney, 1996: 11). Knowledge production is thus conceptualised as being tied to the contingencies and re-constructions of a diversity of cultures and ideologies of social groups within a faculty (Ibid: 12) and Tierney has challenged old ways of thinking and acting in academe by proffering suggestions about new ways of thinking and hence acting (Tierney, (ed) 1998: 3). Institutional practices need to be informed by a philosophy that addresses how to construct ideological and institutional conditions in which the lived experience of empowerment for the vast majority becomes the defining feature of that institution. The core of this position is that "individuals and groups are interpretive beings who are in a constant state of reconstruction of their worlds"... (and)... "individuals and groups define knowledge not merely through and objectively situated context such as a research project but also through the historical and social situations in which individuals find themselves" (Ibid: 15) and they are active agents within cultural politics. Knowledge production does not rely on "abstract terms divorced from the worlds of lived experience" and by extension did not leave room for "absolute spectators" (Denzin, 1991: xi). Kempfer & Tierney's need for interpretation and subjectivity is supported by the post-modernist questioning of the possibility of scientific, objective research. "In reality, the production of knowledge is historically and socially determined; the valorization' of knowledge , or its utility, is dependent on its social context in a given historical period" (Curry, 1997: 3).

Kempfer and Tierney suggest but do not develop and explore, the idea that an understanding of a nation's educational structures and policies and the knowledge

produced is not only determined by insight into the deeper cultural explanations of its social structures and political -economy but also in relation to its position and role in *global relations* (ibid: 3- *emphasis added*). This is 'the moment' in a country's history (Ibid.). Related to the argument that globalisation is mediated by national structural and institutional particularities (Subotzky, 1998: 3-5), Kempfer and Tierney argue that the local political economic context and culture provide the key to understanding the characteristics of national higher education systems. "This larger analysis enables a greater recognition of the dependent relationships among nations not only in the typical realm of economics and politics but also of education and the creation and exchange of knowledge" (Kempfer & Tierney, 1996: 3). "Both developing and newly industrialized countries have rich cultural traditions that contribute to innovations in learning and research unique to the social and cultural moment of a country and its institutions of higher education" (ibid: 2) and the goal of knowledge production should be to decenter the periphery and make the superhighway a two-way street' (quoted in Kempner & Tierney, 1996: 2). At the same time the cultural context of a specific environment has directly shaped organizational culture, structures, functions and practices in the academia of that particular society (Ibid: 2). Each country and its systems "have their own unique circumstances that must be recognized if we are to truly understand the social role higher education plays in a particular country" (Ibid : 5). The element of relativity in Tierney's theory is not totalitarianism and single vision but a 'practical, locatable, critical knowledge sustaining the possibility of webs of connections called solidarity in politics and shared conversations in epistemology' (Burbules quoted in Griffen, 1997: 10). Against the above theoretical pillars, the relevance and purpose of higher education knowledge production can be explained, not in relation to abstract universal prescriptions, but rather in terms of its contextualised fitness to purpose in relation to national development and reconstruction priorities and policy goals. Local and international debates on the new higher education policies in South Africa provide an immediate frame of reference for this explanation.

2.5 SUMMARY

The unity of this chapter resides in its attempt to link theory to the purpose of higher education in the production of knowledge, to indicate how the intellectual basis of producing knowledge requires theorists, researchers and practitioners to formulate their work around values and ideals. I try to raise fundamental theoretical issues, sometimes provocatively in order to stimulate further discourse and debate. Against those who argue that it is possible to research and write within 'objective' forms of theorising, I argue that such complacency is out of order in a period of 'late capitalism' (in the new millennium). I also assert that in an age where the 'relativity' of post-modernist discourses has led to a similar outcome of complacency, there is need revisit the essential tenets of 'old' theories. Since the very methodologies of truth-seeking are being called into question today (Scott, 1997: 14) and in the light of a dearth of local writings on theory, I seek to proffer a hopefully reliable version of reconfigured 'old' theories. I contend that the development of an adequate understanding of the cultural and intellectual promise of educational theory is necessary and that this depends to a large degree on relating educational enquiries to the philosophies of the social sciences that are rooted realistically that is, in the context of 'the moment of truth' in a country's history which, in contemporary times, includes the process of globalisation. A reliable theory should make possible the Cowenian 'reading' of the actions of higher education institutions at a particular juncture of their history. I am acutely conscious of the call for such theorising to be executed adequately and effectively and I can only hope that the reader would assess that the chapter approximates such a need.

It is necessary at the beginning to attempt to unpack problematic terms in order to maintain sensible and coherent dialogue in the terms of 'a hermeneutics of communication' (Radford, 2002: 1-16). The dynamic dimensions and implications of the concepts of science, theory, critical theory and paradigm captured in the chapter indicate the need for Kuhnian shifts in thinking during a transition.

The claim made in the study that countries and by extension, their institutions, are today subject to both global and national imperatives, begins a discussion of globalisation that leads complex socio-economic and cultural changes between and within countries and unleashing uncertainties at both macro and micro levels (Subotzky, 1998: 3). The proposed new theory is partly born from the intellectual uncertainty and dissolution of this condition so adequately explicated by intellectual theorists and practitioners (Scott, P 1997) and inspired by the seminal ideas put forward by Jameson, Tierney and Kempfer and Subotzky (Jameson, 1981; 1988; 1994; Tierney, 1996, Kempfer & Tierney, 1997; Subotzky, 1998, 2001) ideas which themselves are situated in and inspired by, the ideals of both modernism and post-modernism. Through these critical thinkers many of the ideas of neo-Marxism remain tenable as they effectively address the advent of post-industrial society and its cultural concomitants. Descriptions of the 'post-capitalist' society, (for example by Drucker, 1993), represent attempts to come to terms with the new features of capitalism. It is Jameson who uses the concept of 'late capitalism' to incorporate the progressive post-modernist debates within a more totalising theory of post-modernism. The revision and clarification of neo-Marxist doctrine also underscores some of the limitations of post-modern theory and the fact that modernism has not outlived its usefulness (Carr, 1995: 125). The assertion by Carr that the real challenge of post-modernism is to re-conceptualise the relationship between education and democracy in a manner that takes into account capitalist insights, is instructive (ibid: 79-80). "Those who believe that we are now experiencing a complete rupture from modernity use the term 'post-modernity' to identify an entirely new cultural configuration that has its own distinctive and unique features. But for those who recognise the continuities as well as the discontinuities between modern and post-modern times, post-modernity indicates not so much that modernity has come to an end as that it has now entered a new phase" (ibid: 123). Modernism "... assumes in part, that all societies follow the same path to development and the countries at different stages of development represent different points on the same continuum or trajectory" (Arnove, Kelly and Altbach, 1992:5). Jameson's insistence on post-modernism as the 'dialectical cultural logic of capitalism' allows him to assert the uninterrupted nature of development, the expansion of capitalism into 'late capitalism' with its new forms of struggle and resistance and the promise of a

new Utopian social and economic order. The history of theory-building is the history of attempts to conceptualise a historical and social substance itself in dialectical transformation (Jameson in Waugh, 1992: 132) while the very process of theory-building involves generalizing from historical experience and the specific and this has to be done today in the context of an "increasingly interdependent global system" (Giddens, 1990: 16). Capitalism, as a 'cultural deviant', acknowledges multi-dimensionality. The way to understand and explain this world is through 'cognitive mapping' (Jameson, 1988: 350). This is determined by the culture in which the individual lives and defines and distinguishes individual consciousness (Ibid.). Jameson's conception of cognitive mapping is 'borrowed' from a study by Kevin Lynch in 1960 (quoted in Jameson, 1988: 350) in which he asks participants to draw maps of their cities from memory and find that each individual carries 'a map' in his or her head of the physical space in which they live and operate. These maps may not always represent the actual lay-out of the city, but participants are able to draw what is of most significance to them and that is based on their use of the city. "Social totality" for Jameson is determined by the coexistence and interaction of all the 'cognitive maps' of individuals in a society (ibid.). This collective interaction is the cultural effect critical modernists are so efficient in recognising.

Tierney and Kempfer's (1997; 1996) theory of 'critical postmodernism', framed as it is within the particular social and oppressive realities of a country, coheres neatly with Jameson's injunction for the need to think historically. They place great emphasis on the role of human beings and their cultures in the construction of their social realities and the inherent complexity and diversity of both cultures and of the realities. In addition, because they consider higher education institutions as the principal location where knowledge is constructed, the effects of culture, power and politics have a direct impact on the *modus operandi* of knowledge production. For the production of knowledge Tierney and Kempfer argue that we need to move away from "traditionalist assumptions that suggest a metanarrative exists where...disciplines are the sole arbiters of what counts as knowledge" (Ibid: 6). Instead they argue that knowledge production is not simply a scientific process but one that has political, social and ideological implications (Ibid.). "Educational inputs and outputs have meaning only when considered in relation to the larger cultural context that defines a nation's social structure and its educational system"

(Kempfer & Tierney (eds) (1996: 3). There is not a theory of single vision but makes possible a network of connections of solidarity in politics and a shared epistemology (Griffen, 1997: 10).

Critical post-modernism in 'late capitalism' provides a paradigm within which new forms of knowledge are and can be created through emphasis on breaking down disciplines and creating trans-disciplinary (as distinct from interdisciplinary) knowledge. It rejects the distinction between high and popular culture so as to make knowledge responsive to the everyday projects that constitute the diversity of peoples' lives (cf Fuery and Mansfield, 1997). The primary attributes of the late capitalist age of acceleration, volume and turnover, simultaneity and compression and expansion of time and space, risk and innovation which is replacing the trust on which intellectual Fordism depends for its creativity, is mirrored in the attributes of the new knowledge production. The "non-linearity, complexity, chaos whose radical intensification of their application undermines the cumulative character of routine scholarship; reflexivity which puts an end to the sharp demarcations between producers and consumers of knowledge, ensures that knowledge is constantly being reconstructed" (Scott, 1997: 19-20).

The study rejects the portrayal of the advancement of knowledge as a natural, neutral, dispassionate and unbiased undertaking. Knowledge is only neutral in an a-historical context (Curry, 1997) while "...knowledge, as we have known it in the academy, is coming to an end" (Griffen, 1997). The reality is that the production of knowledge is historically and socially determined, the validity and utility of which is dependent on its social context in a given historical period. It is indeed 'political' (Tierney, 1991: 204). There is no a-historical standpoint from which to endorse the values of a critical post-modernism in 'late capitalism'.

The only way to justify the theory proffered here is by appealing to the belief in the willingness of educational practitioners to reconstruct their practices in ways that

would give expression to the implementation of knowledge that promotes the objectives of the new higher education policy. The framework of the theory can bring together the insights on the social transformation of knowledge production that is already embodied in the (developed world) literature. How widespread this alternative knowledge production is in South Africa, is a task for a larger research project - beyond the resources at my disposal - to collect the data and establish precisely the limits of the Gibbons thesis across the gamut of knowledge production. In chapter 4 of this study I try to specify the context of this new mode and its principal characteristics, the existence of the mode and the imperatives of such a mode in the terms of the new higher education policy. There clearly remains a need to 'test' the theory heuristically against more precise empirical experience and evidence of the new practices and ways in which the new knowledge is being produced, alongside the traditional (and familiar) mode within the HE sector.

CHAPTER 3

GLOBALISATION, THE GIBBONS THESIS, SOUTH AFRICAN HIGHER EDUCATION POLICY AND DISCOURSE

3.1 INTRODUCTION

The scope of this chapter is to describe the new mode of knowledge production as proposed by Gibbons (1994; 1998; 2000) and Scott (1994; 1997) and its relationship with South Africa's new higher education policy and the discourses that ensue. I begin with a discussion of the macro forces of globalisation and internationalisation on higher education generally. Preceded by a discussion of some of the pertinent contextual issues such as transformation, Africanisation and funding arrangements an examination of the new higher education policy in South Africa is done through key policy texts and the responses to these. The final section of the chapter consists of a comprehensive description of the nature of Mode 2 knowledge production (the Gibbons thesis), its epistemology and phenomenology as well as its attributes and social characteristics.

3.2 THE IMPACT OF GLOBALISATION

Perspectives on globalisation and higher education distinguish between the globalisation of higher education on the one hand and on the other, the ways in which globalisation impact on higher education. The term globalisation is sometimes used interchangeably with internationalisation which refers more broadly to the ventures by scholars and researchers to establish exchanges and contacts with their counterparts around the world and impact significantly on fields of research and technology. It refers to the phenomena: of students moving from one country to another in pursuit of higher education qualifications, the international flow of academic staff (Scott, 1998) the collaboration between institutions of different countries in teaching and research including the now almost ubiquitous bi-national agreements between governments. Global flows of

information, data and knowledge are inherent features of what is termed the 'new knowledge economy' (Elliot, D; Sadlak, J).

Appadurai (1990) suggests the conception of five dimensions of global cultural flows which move in non-isomorphic paths mediated by disjunction (Appadurai, 1990: 6-7) Ethnoscapes are produced by flows of tourists, immigrants, refugees, exiles, guest workers. Technoscapes are the flows of plant and machinery produced by multi-national and national corporations and government agencies. Finanscapes are produced by flows of money in the currency markets and stock exchanges Mediascapes are the flows which are produced and distributed by print and visual media and lastly ideoscapes are associated with state or counter-state ideologies as portrayed by ideas of democracy, freedom, human rights. In each of these scenario's it is the multi-national companies who have or the developed state who has the power to open or close up cultural boundaries to these flows. This is in relation to their relative power and resources.

The internationalisation kind of interchange should be distinguished from globalisation as a system and process, defined as the impact of trans-national trends in the economy, information technology, science and scholarship and driven by the interests of world capitalism or neo-liberalism (Subotsky, 1998; Kraak, 1997; Orr, 1997). Following the prescriptions of the neo-liberal consensus, countries are urged to adopt structural adjustments that create conditions conducive to unprotected trade, to the free flow of capital, to speculative short-term investments so as to ensure access to markets, and repatriation of profits. According to the neo-liberal interpretation the trans-nationality of the world sustains the exchange and flow of goods, people, information and knowledge while the relative sovereignty of individual countries allows for their own internal cultural homogeneity and diversity (Featherstone, 1990: 1-14). These adjustments lead to reducing state control of the economy and state spending and give rise to a number of contradictions. Firstly, globalisation reduces the national sovereignty of countries (Smyth, 1995: 42-44) while at the same time demanding a role for the state in the creation of suitable conditions, laws and institutions necessary for its operation (Apple, 1999: 4). Secondly, structural adjustment strategies are designed and aimed at creating

domestic conditions favourable to maximising foreign profits (Chomsky, 1997) but they also intend to strengthen the competitive edge of that country. Thirdly, globalisation promotes the idea of a free market which is something of a myth since the idea and principles of a free market do not apply to the countries that have the economic (and military) power to dominate world markets (Ibid.; Smyth, 1995, Kraak, 1997). International competitiveness is a goal aspired to by all nations, developed and developing. In pursuit of this goal, governments encourage closer links between industry and higher education and there remains the possibility that a resolution for education to become a trade service in accordance with the World Trade Organisation's general agreement on trade and services could become reality (Business Day, 02 October 2003). The 'service component' of higher education is interpreted as contributing to the national wealth creation and "education is less part of social policy but is increasingly viewed as a sub-sector of economic policy" (Neave, 1996: 40)).

But even the mood in developed countries has been described as "a sense of deep uncertainty about our capacity to respond positively to the simultaneous challenges of integration and globalisation. Most constituencies agree that, howsoever those challenges are interpreted many features of established economic and social organisation must undergo significant change in the coming decades.

3.3 SOUTH AFRICAN STRUCTURAL ISSUES

3.3.1 Introduction

South Africa represents a microcosm of the global tensions and of the challenge to strike balance between globally oriented economic development and reconstruction and development (Subotzky, 1998: 9-12). How to mediate these tensions and to constructively challenge the negative impacts of globalisation remains at the heart of the South African government policies on the one hand and of higher education on the other. The trajectory of the formulation of South Africa's macro-economic policy reflects the influence of international macro-economic policy (Ibid; Kraak, 2004:265). While a comprehensive account of South Africa's political-economy is beyond the scope of this

study, I limit myself here to a few overarching observations that impact on higher education policies:

3.3.2 Reconstruction and Development Programme (RDP)

The first macro-economic policy framework of the new government was the Reconstruction and Development Programme (RDP) which posited the argument that the goal of distribution was intrinsically linked to the provision of basic needs and the goal of economic growth to increase the export of products. These twin goals were considered compatible within a single plan for social reconstruction. “The RDP is based on reconstruction and development being parts of an integrated process. This is in contrast to a commonly held view that growth and development.....are processes that contradict each other. The RDP integrates growth, development, reconstruction and redistribution into a unified programme” (ANC, 1994: 6). The RDP sought to link economic policy to other policy domains, most particularly education and training and human resource development. The new government believed that “neither a commandist central planning system nor an unfettered free market system can provide adequate solutions to the problems confronting us” (Ibid: 78). Thus a central tenet in the RDP was a need for an enabling state. The enabling state would intervene decisively in the development of an export orientation and in the education and training of highly skilled scientists and technicians. This latter argument led to the predilection toward a single, unified education and training regulatory framework as a response to the pressure of globalisation, the need for increased access (massification) and the emergence of new forms of knowledge production.

3.3.3 Growth, Employment and Redistribution policy (GEAR)

All commentators agree that neo-liberalism directly shapes the macro-economic policy of the new government in South Africa. The Growth Employment and Redistribution Policy (GEAR), released in 1996 theoretically replaced the RDP and became the ANC government’s official macro-economic policy. The succession of the less orthodox RDP

by the 'globalised friendly' GEAR was the first indication of the attempts by the new state in South Africa to attain the monetary policy objectives as prescribed by multi-national organisations such as the World Bank. "The new government instituted something of a voluntary structural adjustment programme designed to create a conducive climate for foreign investment, to win World Bank and IMF favour and to assuage the concerns of local business" (Subotzky, 1998: 7). In the context of GEAR the policy objectives of the new state are made possible, such as reduction of the fiscal deficit and inflation rate, increased privatisation with its corollary of decreased state intervention, removal of trade barriers and easing exchange control regulations.

The significance of GEAR was that it privileged the attainment of monetary policy objectives such as the reduction of the state's fiscal deficit and inflation rate at the expense of other important features of the RDP's broad socioeconomic platform of policies...particularly those elements ...that were premised on coordinated market policies, a developmental state and the provision of basic needs (Kraak, 2004: 265).

An important facet of GEAR is the conceptualisation of its philosophy as "Left-Keynesian" (Webster & Adler quoted in Kraak, 2004: 265). This facet provides the crucial insight into the 'politics and culture' of policy formulation in South Africa at this juncture of the country's history. The tensions in GEAR are manifest in its dual mandate of incorporation into the global project *and* addressing the basic needs of the majority. Although the new state is constrained by the limits imposed on the treasury (Kraak, 2004: 254) it nevertheless is able to pursue some elements of the old RDP as is demonstrated in the new higher education policies. The tensions between global and national development are neatly captured and resolved in the thesis of the 'global development path' and the 'redistributive development path' (Subotzky, 1998: 7). In his thesis of a 'complementary alternative' to neo-liberalism, Subotzky, a writer and theorist 'on the left', attempts to resolve the contradiction between the global and national paths. "Clearly, South Africa mustfollow a complementary development path which seeks to accommodate the inherent tensions between global and reconstructive concerns" (Ibid: 8). Thus globalisation is mediated by national structural (and institutional) particularities as well as the local political economic context and culture that shape the understanding of higher

education (Kempner & Tierney, 1996: 3). Castells' 'developmentist state' is not inappropriate in this regard. The system adopts and develops technology for local needs and the public higher education sector acts as a directive and nationalistic project coordinator to integrate society into a much more interdependent and knowledge-based international economy (Castells: 1994: 111). Put another way, the higher education sector acts as a 'micro-state' in directing programmes relevant to the needs of society and in collaboration with communities, the private sector and government.

3.4 HIGHER EDUCATION POLICY, 1994-2002

Under the impetus of globalisation, the image of the university as an agent of independent thinking and critique of society is being subsumed into the primary purpose of economic development. Fiscal constraints and increased competition lead higher education institutions to become entrepreneurial and their staff denoted as 'academic capitalists' (see chapter 2 above). As primary producers of knowledge and the main sites for scientific and technological research HE institutions conceptualise and configure themselves as sub-sectors of capitalist innovation and its process and outcome as 'academic capitalism' (Slaughter & Leslie, 1997). Through globalisation, the concepts of academic capitalism have become part and parcel of the new policies and discourses in South Africa (Subotzky, 1998: 10). The new policies place great emphasis on research and teaching that reflect the characteristics of the entrepreneurial or market university (Subotzky, 1998:10-12). The knowledge produced in this framework differs from that produced in a framework that sees universities in their traditional and dominant role as 'critic and social conscience' of society.

3.4.1 Key pillars

The key pillars of the new South African higher education policy framework are contained in the following documents: the Report of the National Commission on Higher Education, 1996; White Paper, 1997; Higher Education Act, 1997; South African Qualifications Authority Act, 1997; and the National Plan for Higher Education, 2001.

The pillars can be summed up as a single nationally co-ordinated system with increased access and participation, increased responsiveness to the needs of society and economic growth as well as programme differentiation, institutional niches and co-ordinated planning. (Kraak 2004: 246-252).

3.4.2 Key documents

3.4.2.1 National Commission on Higher Education (NCHE), 1996

The NCHE was set up in January 1995 with the purpose to review and to make recommendations for higher education policy through a broad consultative process. The twelve commissioners, from a diversity of background, were appointed by the state president and began a process of national and international site visits, public hearings, national conferences, workshops and solicitation of written feedback from stakeholders and interest parties. The NCHE Report, presented in July 1996, provides the framework for the reform of the higher education system and lays the foundation for the Green and White Papers that eventually culminated in the Higher Education Act in 1997. It calls for a unified, equitable and programme-based system that is capable of matching what higher education supplies and the demands of an economy that is increasingly reliant on high technology. It is also aimed at reducing the race/ colour, gender, regional and institutional inequalities bequeathed by the apartheid system. The Green Paper that followed the NCHE Report endorses the vision expressed in that Report in establishing

"...a system of higher education which ensures equity and access with success, irrespective of race, colour, gender, age or class; to meet the needs of employment, economic growth, democracy and human rights; to contribute to the advancement of knowledge, observe international quality standards and respond to local and national contexts " (Green Paper, 1996, Chapter 1: 6-8).

3.4.2.2 White Paper, No 3, 1997

The draft White Paper no 3 was released on 18 April 1997 and differs in content and tone from the National Commission on Higher Education (NCHE) Report in that it is more openly critical in its assessment of the role of the HE sector in the development and economic growth of the country in an era of globalisation. It argues that the existing system of provision is too supply-driven without any concern for the priorities of the national economy (Department of Education, 1997: 18). It is also too fragmented and unco-ordinated in the production of knowledge and the development and design of programmes. The major focus of the White Paper is the transformation of the higher education sector which is to be implemented within a 'new single co-ordinated system'. It stresses the promotion of equity of access and the eradication of all forms of unfair discrimination and redress of past inequalities. Learners must be provided with the realistic chance of success, research and teaching will meet the needs of a growing economy in a global environment, programmes and practices will be promoted that emphasise critical and creative thinking, cultural tolerance, non-racism and non-sexism (Department of Education White Paper, No 3, 1.14). A major focal point is on the need for the creation of conditions for economic development and for the production, acquisition and application of new knowledge. The latter is unambiguously equated with economic growth. "National growth and competitiveness is dependent on continuous technological improvement and innovation, driven by a well-organised, vibrant research and development system which integrates the research and training capacity of higher education with the needs of industry and of social reconstruction (Department of Education, 1997: 1.12). The forms of knowledge and scholarship envisaged by the White Paper are those that address, through research and innovative teaching, the diverse problems and demands of the local, national, southern African and African contexts" (Ibid: 14). The much clearer references to consideration of both global and national reconstructive priorities in the White Paper No 3 make clearer the need for new types of knowledge production.

3.4.2.3 Higher Education Act, 1997

The Higher Education Act was promulgated in 1997 with the primary functions of regulating higher education, providing for the establishment of a Council on Higher Education and providing for the establishment, governance and funding of public and private higher education institutions. Other functions include provision for the appointment and functions of an independent assessor, quality assurance and quality promotion in higher education and for transitional arrangements and the repeal of certain laws.

The main purposes of the Act are described as the establishment of a single co-ordinated higher education system which promotes co-operative governance and provides for programme-based higher education, the restructure and transformation of programmes and institutions so that they could respond better to the human resource, economic and development needs of the country, the redress of past discrimination and the assurance of representivity and equal access, the provision of optimal opportunities for learning and the creation of knowledge, the promotion of values that underlie an open and democratic society based on human dignity, equality and freedom, the promotion of democracy, academic freedom, freedom of speech and expression, creativity, scholarship and research, the pursuit of excellence, the promotion of the full realisation of students and employees, the tolerance of ideas and appreciation of diversity, response to the needs of the country and of the communities and to contribute to the advancement of all forms of knowledge and scholarship in line with international standards of academic quality (Republic of South Africa, 1997).

The proposal for a 'single system' has strong international antecedents and the influence of international consultants to the Ministry of Education such as Michael Gibbons, is clearly visible. The Gibbons thesis that demands increased responsiveness to economic development needs through a shift from closed knowledge systems, controlled and driven by canonical norms of traditional disciplines and by collegially recognised authority, to more open knowledge system that is dynamically interactive with external social

interests, 'consumer' or 'client' demand, and other processes of knowledge generation are captured in the Act. The Act prescribes knowledge production that obliges "the incorporation of the perspectives and values of previously silenced groups into the educational and cognitive culture of institutions. Higher education institutions will increasingly have to offer a greater mix of programmes, including those based on the development of vocationally-based competencies and skills needed in the workplace" (NCHE, 1996: 6-7).

In response to the expansion in student numbers, the demands for more and diverse learning programmes and the increasing access of working class and previously marginalised students, the state attempts to move away from divided systems of provision to a more unified system. The corollary of this move is the development of new forms of knowledge and learning and teaching methodologies that are more in tune with the requirements of previously marginalised adult and working students.

3.4.2.4 South African Qualifications Authority (SAQA) Act, 1997

The South African Qualifications Authority Act of 1997 establishes the legal framework for the development and implementation of the National Qualifications Framework (NQF). The primary aim of the NQF is to create a flexible and integrated education and training system that promotes a process of lifelong learning. Flexibility, mobility and integration are ensured through one unified framework comprising of three bands or levels within which qualifications are awarded (General, Further and Higher education bands) as well as through the recognition of work and experience for which no formal qualifications exist (RPL). The specification of an outcomes-based model of learning and teaching ensures that the outcomes to be achieved for any qualifications provide the starting point for the development of a curriculum. The NQF self-consciously and in response to critiques of outcomes-based models in other countries, most notably Australia, Canada, United Kingdom and New Zealand, tries to promote the adoption of a 'thick-rich' definition of outcomes. In these systems, the emphasis is more often than not, on what learners can do, to the exclusion of knowledge. A thick-rich definition

assures that assessment means the assessment of both knowledge and performance, as actively described in the critical cross-curricular and the specific outcomes.

In tandem with international outcomes-based models, the NQF differentiates between essential and specific outcomes, the former being broad, cross-curricular outcomes and the latter being the contextually demonstrated knowledge, skills and values within a specific learning area (subject). Specific outcomes, together with their assessment and performance criteria, form a unit standard in the language of the NQF. Credit is awarded for each unit standard and allows for flexible pathways to attaining qualifications. Learners can work towards completion of the level at their own pace and within their own time-frame by accumulating unit standards individually. They may even obtain credits from the recognition of certain work experience without having studied formally. In NQF parlance, a qualification is constructed with the specific outcomes as building blocks and together with assessment criteria is classified as a unit standard.

3.4.2.5 National Plan for Higher Education, 2001

The NPHE is the outcome of a consultative process that incorporated the responses of HE institutions and other constituencies over a period of almost six years and the analyses of higher education trends by the Department of Education and the Council for Higher Education (CHE). It began with the National Commission on HE in 1995, continuing through the White Paper in 1997 and the Report by the Council on Higher Education. The NPHE was approved by Cabinet in February 2001 and is based on the policy framework and the goals, values and principles as outlined in the White Paper. The five key policy goals are to (a) increase access and to produce graduates with the skills and competencies necessary to meet the human resource needs of the country, (b) promote equity of access and outcomes and to redress past inequalities through ensuring that student and staff profiles reflect the demographic composition of South African society (c) ensure diversity in the institutional landscape of the higher education system through mission and programme differentiation to meet national and regional skills and knowledge needs, (d) build high-level research capacity, including sustaining current research strength and

to promote research linked to national development needs, and (e) to restructure and consolidate the institutional landscape of the higher education system to transcend the fragmentation, inequalities and inefficiencies of the divided past and to enable the establishment of South African institutions consistent with the vision and values of a non-racial, non-sexist and democratic society (Department of Education, February 2001: 10).

The NPHE is unambiguous in its demand of the new role for higher education institutions. The achievement of the broader goals and objectives of the transformation and reconstruction of the higher education system is equated in the policy ideals with an equitable, sustainable and productive higher education system that will produce graduates who will contribute to the human resource skills and research needs of the country. It is envisaged in the plan that these would partly be achieved through the principle and practice of access and equity of black students (Department of Education, February 2001).

Higher education and public higher education especially, has immense potential to contribute to the consolidation of democracy and social justice and the growth and development of the economy. These contributions are complementary. The enhancement of democracy lays the basis for greater participation in economic and social life more generally. Higher levels of employment and work contribute to political and social stability and the capacity of citizens to exercise and enforce democratic rights and participate effectively in decision-making. The overall well-being of nations is vitally dependent on the contribution of higher education to the social, cultural, political and economic development of its citizens (CHE Report, 2001: 25-26).

The knowledge-driven role of higher education as envisaged by the National Plan is three-fold, (1) the mobilisation of human talent and potential through lifelong learning to contribute to the social, economic, cultural and intellectual life of a rapidly changing society, (2) the training and provision of 'globally equivalent skilled' but nationally conscious labour to strengthen the country's enterprises, services and infrastructure and (3) the production, acquisition and application of new knowledge focussed on national growth and competitiveness and dependent on technological improvement and innovation. In short, the research and training capacity of higher education should be

integrated with the needs of industry and of social reconstruction, within the context of globalisation (Department of Education, 2001: 12; also Department of Education, 1997: 14).

There can be little doubt that the National Plan provides us with a unique opportunity, perhaps one that will not come readily our way again, to establish a higher education system that can meet the challenges and grasp the opportunities presented to us by the contemporary world. We must be able to produce graduates with high quality skills and competencies in all fields. We must be able to produce research that will build our economy and make us significant player on the global stage. We must be able to create a learning society that draws in people of all ages and from all walks of life and gives them the opportunity to advance, develop and enrich themselves, both intellectually and materially. Most importantly, higher education must make a lasting contribution towards building the future generations of critical black intellectuals and researchers (NPHE, Foreword).

Higher education is also mandated to play a critical and central role in contributing to the development of an information society in SA, both in terms of skills development and research. As Manuel Castells, the noted social theorist of the information revolution and who served on the South African Presidential International Task Force, argues: "if knowledge is the electricity of the new informational international economy, then institutions of higher education are the power sources on which a new development process must rely" (quoted in Ibid: Foreword).

The final phase of higher education policy development lies in the imperative of mergers of institutions (2001-2002) and as proposed in the NPHE. The primary issues in this phase are the differentiation within a single higher education system and the efficiency and sustainability of institutions. The 'size and shape' resolution is a response for a review and reform of the institutional landscape of HE. The report by CHE task team essentially articulates the framework of the White Paper on the establishment of a single HE system, but with differentiation and flexibility. A three-tiered system is proposed. It includes bedrock institutions dedicated to offering undergraduate qualifications with specific limitations on postgraduate offerings and research programmes, comprehensive

institutions dedicated to postgraduate offerings and research capacity with an emphasis on the production of 'new scientific knowledge' and the training of high-skilled graduates, and finally the extensive and limited doctoral institutions as between the first two, dedicated to offer extensive master's programmes but with the same limitations placed on bedrock institutions with regard to doctoral programmes and research. Since these pronouncements seem to indicate the preference by most universities for comprehensive status (ISWI Voice of HE leadership, 2003). "The benefits of comprehensives would be increased access, with students able to choose from a wider array of career-focused and academic programmes; improved articulation between career-focused and academic programmes; the strengthening and development of applied research; and enhanced capacity to respond to the socioeconomic needs of neighbouring regions given the wider range of expertise available after institutional merger (Ministry of Education, 2002: 27).

3.5 CONTEXTUAL HIGHER EDUCATION ISSUES

3.5.1 Transformation

The word transformation is a vexed one in an environment that acknowledges "...that there are many transformations in a complex process....." (Van der Walt, 2002: 42). Nonetheless it has become a fixed term of discourse today. At the heart of the new government's transformative vision is ".....a broadening of the social base of the higher education system in terms of race, class, gender and age. The system will cater for a considerable more diverse body of learners than at present. They will become increasingly representative, as all levels of the system and in all programmes, of the racial and gender composition of the South African population.....the system will open its doors, in the spirit of lifelong learning , to workers and professionals in pursuit of multiskilling and reskilling....." (DoE, White Paper, 1997). The discussion of transformation in the HE sector is limited here to two inter-related indices: demographics and the idea of 'Africanisation'.

The 'ethnic composition' of South African universities has changed beyond recognition in the past decade (Hugo, 1998: 6-8). Black enrolments at historically white institutions (HAI) have increased from 25% in 1993 to 57% in 2000; and at technikons from 32 000 to 45 500 during 1995 and 2000 (National Plan 2001: 10).

The profiles of students are no longer predominantly white, male and middle class but instead are drawn from a much wider social base. Black students themselves are characterised by a heterogeneity that goes beyond 'race' and colour but includes categories of 'cultures' or cultural traditions and class. The changed demographics are evidenced in two ways: increases in the black student numbers (but not necessarily in the fields required by government, and also not amongst staff) as indicated in the tables 3.5.1 to 3.5.4 below, and in administrative organisation. The latter has seen the establishment of transformation forums, representative of a variety of stakeholder groupings - so defined by the interests they represent - students, trade unions, academic staff associations, women's groups, business groups, alumni and other interest groups (Hugo, 1996: 8).

With the spectre of racial consciousness ever present, lines of stratification are also mediated by colour within colour. "New lines of stratification latently always present but muted in the interests of black solidarity, have also emerged between the African majority and the minority coloured and Indian groupings with the latter sharing white's disaffection with aspects of Africanisation - a disaffection captured by the aphorism that in the old South Africa 'we were oppressed because we were too black and in the new South Africa because we are too white'" (Hugo, 1998: 6).

Table 3.1 Headcount of student numbers in HE institutions 2001

Institution	Headcount
New University of South Africa	210 275
Tshwane University of Technology	52 373
University of Pretoria	44 643
University of Johannesburg	36 226
Nelson Mandela Metropolitan University	35 317

University of Kwazulu Natal	34 207
Northwest University	30 293
Durban Institute of Technology	26 042
Cape Peninsula University of Technology	21 180
University of Stellenbosch	20 557
University of Witwatersrand	20 339
University of Cape Town	18 602
University of Free State	17 741
Vaal University of Technology	16 110
Walter Sisulu University of Technology and Science	15 123
University of Western Cape	10 499
University of Limpopo	10 233
Central University of Technology	8 828
University of Fort Hare	6 982
University of Zululand	6 320
University of Venda for Science and Technology	6 101
Rhodes University	4 965
TOTAL	652 956

Source: CHE Report South African Higher Education in the First Decade of Democracy November 2004, chapter 3

Table 3.2 Headcount Enrolment in higher education- graduates and drop-outs -1998

Total	Graduate rate	Drop-out rate
600 000	75 000	100 000
	12.5%	16.6

Source: CHE Report 'Towards a New Higher Education Landscape: Meeting the Equity, Quality and Social Development Imperatives of South Africa in the Twenty-first Century' June 2000

Table 3.3 Percentage enrolment by race/colour

Year	Black	White
1993	40	47
1999	59	29

Source: CHE Report 'Towards a New Higher Education Landscape: Meeting the Equity, Quality and Social Development Imperatives of South Africa in the Twenty-first Century' June 2000

Table 3.4 Distribution of Headcount Enrolments by New Institutional types 2001

University	University of Technology	Comprehensive	Distance Education
219 061	124 533	86 666	210 275
34 %	19%	13%	32%

Source: CHE Report 'South African Higher Education in the First Decade of Democracy November 2004, chapter 3

Rather than the origin of the word 'Africanisation' that is closely associated with the anti-colonial movements in Africa, it is the acknowledgement that the word has 'multiple meanings' (Kofi Poku Quan-Baffour, 2004) that is of immediate interest as it raises important theoretical questions about the culture of knowledge production. Advocates of Africanisation put forward four elements of a campaign 'to Africanise' knowledge: (1) as a mode of changing demographics (2) as a means of changing curricula to reflect African cultures (3) as a means to expand the learning and teaching repertoires of learners and teachers and (4) as a means to changing criteria of excellence and quality (ibid; MacGregor, 1996: vii). Appeals are made for an emphasis on problems peculiar to African societies (ibid) and for the promotion of action that is "in the interest of Africa" (Makgoba, 1999; 1997). Questions that need to be posed on the crucially important latter

statement are: what are interests? What are the bases of such interests? Are they economic, political, religious, cultural, class, biological, colour and or other categories?

3.5.2 Funding

The fact that black student numbers are increasing while those of white students are decreasing has as much to do with the general population demographics as with funding. Under the old (before 2004) formula, the fundamental basis for the determination of an institution's subsidy allocation was projected, based on the number of students from the year before plus the difference between that year and the year before that. This methodology was highly problematic for institutions that faced serious declines in enrolments such as the historically disadvantaged institutions, Unisa and the old Technikon SA (Merisotis et al, 2000: 17). The figures indicate that the income of the whole university system in 1990 was 39 percent higher than that of the technikon system and the average tuition fee per FTE enrolled student in the university system 47 percent higher. But the average cost to the government of an FTE student in the university system was 30 percent higher than in the technikon system (Ibid.).

A new funding framework was approved in December 2003 and has been used for the first time for the 2004/ 2005 funding year (to 2006/7). It considers actual student enrolment numbers and based on equity plans, output or performance, three-year rolling plans (each plan is reviewed annually - to take account of changing national conditions or institutional performances) and operational plans, across a four to five year period. The institutional plans are approved and consolidated by the Ministry of education (and equity plans by the Ministry of Labour) into system-wide total of FTE places to be funded by government. There is no indication (yet) that the funding formula is commensurate with the types of knowledge production promoted by government policies.

Technikon education intended to bridge the gap between the university degree and the technical college qualification; even though they were themselves constricted by a narrow, truncated conception of knowledge production that did not incorporate the full

spectrum of the diverse values that have moved into the sector (see 5.3.1.4 below). They have also made a major contribution in reversing the 'inverted pyramid' of enrolments that have seen a 44% growth between 1993 and 1999 compared to the 9% growth rate for universities during this period (CHE Report, 2000/2001)

3.6 DISCOURSE IN HIGHER EDUCATION: 1994-2002

The "...history of philosophy is understood as the history of attempts to conceptualise a historical and social substance itself in constant dialectical transformation" (Jameson in Waugh, 1992:132). The new higher education policy framework and its implications for knowledge production have revealed high degrees of "discursive tension and competing interpretations" (Kraak, 2004: 244) among and within higher education institutions. In South Africa's 'politics of otherness' (Jameson, 1992: 133) the variety of competing paradigms have prevented wholesale consensus regarding the content of policy formulation and may prevent consensus in interpretation and thus implementation, but they dialectically set the basis for further debate and enhancement of theory-building. These discourses have evolved on the right and left of the political stage in South Africa but they all share a demonstration of strong relationships with structural limitations as denoted in Jameson's theory of late capitalism. Superimposed on these paradigms is the impact of globalisation and internationalisation that pose multiple theoretical challenges for contemporary knowledge production and distribution.

Kraak identifies three discourses in South Africa, a taxonomy that may itself be problematised, (a) the high-skills discourse (b) the radical progressive and popular-democratic discourse (c) the stratification discourse (Kraak, 2004: 252-263). Other commentators describe the discourses in a different language: human capital, post-fordism and outcomes-based education as theories governing South African thinking (Samson & Vally, 2001: Labour Bulletin). Still others divide discourse concerning HE into the 'technicist, procedural', 'radical anti-apartheid, non-reformist' and 'realist-instrumentalist' (Reddy, 2004). It is difficult to place interventions and discussions about HE and social transformation neatly into any one paradigm (ibid: 7) and yet attempts

must be made to do this if we want to be guided into action. I use Kraak's categorisation of discourses only because it is possible to incorporate the propositions made by human capital, post-fordism, and outcomes-based theories proponents.

3.6.1 High skills discourse

The genealogy of this 'economic competitive' discourse can be traced to the 1980s' although some commentators trace it back to the 1950s' (Millar, 1991: 170) when education and training received the renewed attention of the government. In the midst of the country-wide school boycotts and the aftermath of the 'Soweto revolt' in 1976, the state appointed a Human Sciences Research Council Commission of Inquiry into education, commonly known as the De Lange Report, to explore new forms of education provision. The years between 1977 and 1982 saw a great expansion of technical and vocational education dominated, by the discourse of 'skills shortages' (Buckland, 1982). The recommendations of the De Lange Report concerning an education system which would meet the labour needs of the country, education of equal quality for all population groups and the inter-facing of formal (academic) with non-formal (vocational) education are echoed in the post 1994 policy documents despite fundamental differences in the philosophical underpinnings between pre-1994 and today. In the former period, it was argued that skilled labour shortages in South Africa arose in the 1960s' primarily as a result of a pattern towards an 'organic composition of capital through mechanization, reorganization and rationalization of the labour process to enhance capital's national and international competitiveness' (Chisholm, 1991: 154). South Africa's "pattern of dependent industrialisation, involving the importation of capital-intensive foreign technology, has both increased ...(its) ...dependence on the outside world, and necessitated raising the productivity of labour" (Ibid: 154). These premises have come to be revisited in the period of globalisation which "has undoubtedly been the key trigger in the emergence of the high skills thesis" (Kraak, 2004: 252). Borrowing from the theory of 'low-skills or high-skills equilibrium' of a group of British economists and educationists, Kraak's thesis posits the argument that "the attainment of successful reform

in one institutional sphere...is conditional on parallel changes occurring at other institutional levels" (Ibid:253). The South African variant of this thesis is linking education, the labour market, macro-economic reform within 'a single integrated programme of socioeconomic reconstruction...promoting the ideas of a developmental state of a unified and integrative education and training regulatory framework' (Ibid: 253-254; Subotzky, 1998: 5-8). This contrasts with the "dualistic approaches of industry and of the previous government who both saw growth as a separate and necessary prerequisite for redistributive activities and supported the 'trickling down' thesis of capitalist development.

3.6.2 Radical progressive and popular democratic discourse

The radical progressive and popular democratic discourse derives historically from the 'People's Education' movement of the 1980s'. Primarily a political movement, this discourse views education as a vehicle for liberation and represents 'a fledgling radical pedagogic alternative to Bantu education' (Soudien, 2000; Badat et al, 1994; Kraak, 2004). At the heart of the resistance to apartheid education and its constraints were alternative views of the nature, sources and limits of education and of knowledge itself. The slogans of 'education for liberation', 'liberation before education' were all pointers to these alternative views bearing out the claim that "...every epistemology tends to become an ethic and every way of knowing tends to become a way of living. The relation established between the student and the subject, tends to become the relation of the living person to the world itself. Every mode of knowing contains its own moral trajectory, its own ethical direction and its own outcomes" (Palmer, 1990: 107). The central propositions of 'People's Education' include the following: development of critical thinking, interdisciplinary curricula, learner-centeredness, participatory teaching methods, community involvement and the demand to link formal education with the world of work (Kraak, 2004: 257). They could in fact be said to represent the embryo of the NQF and outcomes-based education formulated first by Cosatu in 1993/4 and finally in 1997 by the SAQA.

The dramatic growth in student enrolments in the past two decades in SA is characterised by access to vast numbers of these militant and previously marginalised students into both the residential and open learning systems of higher education. Proponents of the radical progressive discourse support a shift from closed to more open intellectual systems in the academy (Scott, 1997). A shift that demands an epistemology away from closed knowledge systems to open ones that are dynamically interactive with outside interests and knowledge structures, to the incorporation of the values of non-elite communities and to a change in the traditional functions of HE.

3.6.3 Stratification discourse

This “residual discourse of the Old Order” (Kraak, 2004: 259) has strong roots in the education policy of the previous government and was shaped historically by the adoption of the 1974 trinary system of higher education provision. The trinary model proposed by the 1973 Van Wyk de Vries Commission separated the functions of universities from those of technikons and technical colleges. The stratified thinking is variously supported and critiqued by a number of commentators. The Committee for Technikon Principals has welcomed the accommodation of education and training for "the various social needs of the country" (CTP, 2000: 2) while the South African Universities Vice Chancellors Association argues that the three-tiered architecture is "conceptually problematic as it establishes artificial dichotomies between research and teaching and between undergraduate and post-graduate provision" (Kotecha, 2000: 1). An analysis of the 'Size and Shape' report by the Task Team of the Council on Higher Education (CHE, 2000a; 2000b) could lend credence to the argument that the model is still in evidence today as is demonstrated by the three institutional types briefly described above (3.4.2.5).

3.7 NOTION OF POLICY-GAP

In response to the evidence of the growing gap between academic norms and practices and the needs of society, the contribution of higher education towards the public good

and social reconstruction and development is being rigorously reviewed (Tierney, 1997; Subotzky, 2000). In his work on agenda setting in politics, Kingdon (1995) argues that knowledge from outside the bureaucratic-political system struggles to get on to the political agenda. He further suggests that external ideas can get onto agendas only when there are major problems or strong conducive ideologies. The need to understand the distinction between policy as pronouncement and policy as practice is highlighted (Jansen 2000; McGrath 1996; Samoff 1995; Ball 1990). The policy gap in South Africa is understood as the mismatch between the intentions of a policy and the practice and outcomes that exist and between the commitment and realisation of these intentions. It is also perceived in the context of the different understandings by the implementers of education policy, the distinctions between homogeneous and differentiated and the multiple identities of implementers (Carrim 1999). The new policies are critiqued for being 'heavy on frameworks and light on prioritization' (Samoff, J 1995/ 6) and for not intending to achieve their objectives (Jansen, 2000). The 'idealistic frameworks' have also been judged as necessary in order to generate " a hegemonic discourse for change which could bring about trust and binding policy behaviour" (Sayed, 2002: 30) and that indeed, the time has been reached for "the third unfinished phase" (ibid) in policy making which is about the dynamic of implementing, institutionalising and internalising the proposed and indeed legislated changes (Kallaway, 1999).

A primary intention of the new policy is to lay to rest the contention that South African universities are out of touch with the society they serve (Higher Education Review, April 1996). Ade Awayi, Goma & Johnson well-known African scholars had this to say about latter-day universities in Africa:

The universities in Africa cannot escape the responsibility of responding, in a new and creative way, to the serious challenges of capacity building and human resource development in Africa which is now being accorded such a high profile...they must strive to be key contributors to national capacity-building processes.They will have to demonstrate continuing relevance in a rapidly changing world. Their teaching and research will be called upon to support the efforts of the continent's emerging private sector, including non-governmental development organisations and

business enterprise. To this end, course content may need to give greater emphasis to the development of critical thinking and problem-solving capacities, and to impart specific management and administrative skills. At the same time greater flexibility in academic programs may be needed to incorporate interdisciplinary approaches and accommodate part-time or continuing studies (Ade Ajayi et al, 1996: 201-204).

The objective "to create a unified and effectively functioning system to create the necessary conditions for institutional change" (Sayed 2002: 30) requires firstly a paradigm-shift to a Cowenian reading; and secondly to a bridging of the gap between pronouncement and implementation through praxis. While there may be an absence of a uniform mental map (or model) of the new HE policies as well as the existence of tensions spawned by competing ideas of how HE should be transformed, the content of the policies is described quite simply and with sufficient clarity when it comes to the type of knowledge production that should be promoted. It is clearly up to higher education institutions to exploit these conditions and give concrete expression to the values and principles underpinning the new policy framework through the production and distribution of relevant knowledge.

Higher education institutions are being challenged to transform themselves from ivory tower academe to scholarly institutions who serve the broader interests of society. This interpretation of the social purpose of the university is consistent with equitable social renewal, contributing to a better life for all and service to the country.

3.8 KNOWLEDGE PRODUCTION

3.8.1 Traditional approach

Arguably the foremost advocate of the traditional approach is Burton Clark who states succinctly that, "It is the discipline mode of organisation that has rendered higher education over time and space, basically meta-national and international" (1983: 29). In this perspective the advancement of knowledge is most often seen as a neutral undertaking, executed by objective scientists within disciplines. The `community of

scientists' (Ibid.) "speak the same language", which is international and which enables local, parochial and cultural differences to be broken down. The traditional view is premised on core beliefs: the subject matter of a discipline transcends time and space and reflects neutral categories; secondly, knowledge advances in a linear fashion and is accretionary, with scientists building on the work of predecessors; thirdly scientists undertake basic research in similar ways and provide similar responses to questions. This approach prioritises particular topics based on breakthroughs achieved within a discipline. The desire for a cure for AIDS for example, or a solution to the depletion of the rainforest, or the alleviation of poverty, may prompt scientists to undertake research. The stimulus may come from outside the discipline but the scientists within a discipline direct and maintain the control in the production of knowledge. Rewards and incentives are linked towards publications and conference presentations while quality control is done by like-minded scholars in similar fields at peer universities. Indeed, accountability is towards that community. "The inherent strengths of university research are in theory related to the intersection of discipline and institution. Scientists in their research roles are oriented more toward their peers in the scientific community, rather than their bureaucratic superiors in their institution" (Geiger, 1985: 67). The relationship between university and society is not necessarily synchronised around common goals and in cases where government funding is procured for certain research topics, it remains the scientists and academics at the university who set the parameters and who control the investigation. The research, results and knowledge are incorporated into the undergraduate and graduate curriculum. In the final analysis it remains the discipline that drives the work of the faculty and to a large extent the function and purpose of the university.

3.8.2 Cultural approach

The term 'culture' is used in the study to suggest that people are interpretive beings who are in a constant state of reconstruction of their world (Tierney, 1997: 14-15; Subotzky, 1998: 5). Through culture, people make sense of their lives and the world and attach value to ideas and phenomena. The cultural perspective sees knowledge production, not

as a neutral and objective undertaking but assumes that it is constructed and mediated by social beings. This view assumes that knowledge (1) is socially constructed; (2) is created not discovered; (3) is approached from a localised viewpoint; (4) is approached from the viewpoint of participants; (5) is a dynamic process that is defined by the world in which it is situated; (6) is an ideological construct that organises beliefs, actions and expectations (Tierney, 1997: 15-16).

The social construction of knowledge defines the latter not through objectively situated contexts but through the historical and social situations in which people find themselves. Without the cultural dimension it is impossible to make sense of a post-modernist world of diversity and plurality. We need "to move away from traditionalist assumptions that suggest a metanarrative exists where international disciplines are the sole arbiters of what counts as knowledge.....knowledge production is not simply a scientific process but one that has political and ideological implications as well" (Kempfer & Tierney, 1996: 6). The central notion is not on the creation of an environment conducive to knowledge production but on how knowledge gets constructed and utilised in different situations and contexts.

In all knowledge production events there are no 'givens' or *a priori* consciousness, no objective empirical data or facts, nor inborn categories or cognitive structures. Constructivist and dynamic forms of knowledge produced in action, through experience and in network environments gain effectiveness in complex and fast-changing problem-solving contexts. With roots in Emmanuel Kant's synthesis of rationalism and empiricism constructivist forms of knowledge reject the assumption that the world is knowable objectively but in stead argues that knowledge is generated out of a complex process involving social, political and cultural factors (Schon, 1971; Kingdon 1995).

Two basic principles define dynamic and cultural forms of knowledge: knowledge is not passively received either through the senses or by way of communication, but is actively constructed by the subject; and the function of cognition is adaptive and serves the

subject's organisation of the experiential world, not the discovery of an objective ontological reality (Mahoney, M. 2002: 11).

3.9 DEVELOPMENT AND THE GIBBONS THESIS OF MODE 2 KNOWLEDGE

The 'world depression' caused by the oil-crisis of the early 1970s' compelled the South African state to articulate a need for shifts in the economy. Following the failed de Lange Commission of Inquiry in 1981, the state attempted to realise the economic shift from the dominance of mining towards sectors such as manufacturing and services through a reorientation of education policy. The Education Renewal Strategy (June 1991) and the National Training Board's 'Investigation into a National Training Strategy' (January 1991) together formed the basis of the new post-1994 policy to link education and training with the economic needs of the country. Black people featured centrally in this national training co-ordination and certification effort. Trade unions, specifically Cosatu, supported the move towards a 'high skill high wage' economy, the negotiation of career-paths for workers, the facilitation of multi-skilling of workers, worker participation in workplace decision-making and on the whole to transform the education and training system (Bird, SALB, 1990). Cosatu's own Education and Training Framework (1994) for adult basic education is self-consciously outcomes-based with emphases on portability of qualifications and credits and the recognition of tacit skills and prior learning (Cosatu Participatory Research Project, 1993). This Cosatu model provided the basis for the development of the NQF after the victory at the polls of the African National Congress (ANC) in 1994 and it is seen as the education and training vehicle to transport the country out of underdevelopment and poverty.

A key question in the study is whether a culture of Mode 2 type research serves the needs of South Africa as a developing country, more effectively than a culture of Mode 1 knowledge. Gibbons highlights the importance of Mode 2 knowledge in the developing country context

To meet both national and community needs a different organisation of knowledge production than Mode 1 is required. The elements of that organisation lie not necessarily in the wholesale abandonment of Mode 1, but rather in the developing linkages between Mode 1 and Mode 2....The key elements (are) a focus on understanding complex systems, an intellectual orientation towards problem-solving, the use of computer simulation and modelling techniques....the teamed involvement of broad ranges of interest and expertise. All countries possess particular complexes of natural resources, local ecologies, and distinct economic and political systems. These could become the objective of exhaustive research, the more so if local teaching programmes were oriented to providing problem-solving skills. As soon as one begins to focus on understanding complex systems the need for different types of expertise become obvious- and the need for partnerships and alliances becomes imperative(Gibbons, 1998: 54).

Gibbons' proposition that the past two decades has seen the emergence of an 'economically-oriented paradigm' of the function of higher education in society, one that is meant " to serve society, primarily by supporting the economy and promoting the quality of life of its citizens" (Gibbons, 1998: 1). While the role of 'critic of society' is not replaced, a more pragmatic role is assigned to universities in their pursuit to provide qualified labour power and to produce relevant knowledge to that society. "For many, Mode 1 is identical to what is meant as science. Its cognitive and social norms determine what shall count as significant problems, who shall be allowed to practise science and what constitutes good science. Forms of practice which adhere to these rules are by definition scientific while those that violate them are not (Gibbons et al 1994: 2-3).

He considers several empirical examples from developing countries in which economically-oriented models exist in research. "...these initial experiments are forerunners of future models and many more of them will be needed to cope with the complexity of local environments and the need of local communities" (Gibbons, 1998: 54). The challenge is for higher education institutions to "...use their Mode 1 resources to extend their capabilities by means of programmes of collaboration in which the sharing of resources is central. This effort at extension will draw these universities into the distributed knowledge production system, focus their attention on the needs of their

communities, direct their efforts to the understanding of local and national complex systems and in the end, create a new culture of teaching and research - with relevance built in! If science will not help to solve the problems that the developing countries face, then maybe research should be given a chance" (Gibbons, 1998: 55).

The first form of Gibbons' 'socially distributed knowledge' is the re-emergence of local knowledge as opposed to expert or abstract knowledge. The term 'local knowledge' has recently been plucked from the title of a book by anthropologist Clifford Geertz who argues that contrary to conventional wisdom, in pre-modern cultures traditional knowledge was rich, varied and well-adapted to local milieus (quoted in Scott, 1997: 21). The "...spectacular growth of cultural production is usually little noticed and is certainly not given attention equal to the attention accorded to innovation and growth in scientific and technological areas" (Gibbons et al, 1994: 90). The reasons for this neglect lie in the assumption that the connection of the humanities to economic development is weaker and that cultural production is less costly. But ".....cultural products are the symbolic currency in the market of life-chances...." (Ibid: 91).

3.9.1 Massification and democratisation

The expansion of student numbers in higher education in South Africa "is generally described as a transition from an 'elite' to a 'mass' system, or as 'massification'. The terminology denotes more than a mere increase in enrolment. It also refers to "a series of concomitant changes that must accompany greater numbers" (NCHE, 1996: 76). These concomitant changes are: diversity of students backgrounds, types of programmes and qualifications offered, the integration of work and study and new visions and missions of institutions (Ibid: 5).

In quantitative terms, the past decade saw headcounts in higher education in South Africa increase from under 250 000 in 1984 to over half a million in 1998. It is not insignificant that technikons grew by 153% in the first half of the decade, with the ratio of university to technikon changing from 83:17 in 1984 to 64:36 in 1998 (Cooper & Subotzky, 2001:

18). While universities grew by 23 percent between 1988 and 1993 and by only 1 percent from 1993 to 1998, the growth at technikons decreased from 153 percent in the first half of the nineties to 34 percent thereafter (Cooper & Subotzky, 2001: 18), still a relatively high growth rate by any standard. The geographical distribution of student enrolments across the nine provinces of the new South Africa sees 60% of all student headcounts concentrated in Gauteng and distance learning institutions namely University of South Africa (Unisa), Technikon South Africa (TSA) and Vista University Distance Education Campus (Vudec). Does this quantitative picture cohere with the quality required to make an impact on the economic development of the country? According to a report by the HSRC in August 1999 the biggest challenge remains the fight against unemployment intensified by the fact that the country's workforce is predominantly low-skilled and black. In addition, a lack of job opportunities for low-skilled workers reduces their chances of acquiring work-related skills or experience, a typically chicken-and-egg situation (HSRC Report, 1999).

The establishment of technikons could be seen as important indicators of both alternative knowledge production and of massification. And unlike the traditional universities, technikon qualifications have been transformed from an over-emphasis on science and applied science to what can be typified Mode 2 knowledge particularly in undergraduate degrees. The nature of Mode 2 knowledge is well suited for achievement of the goal of massification. Through the institutionalisation of Mode 2 knowledge, massification becomes an entrenched phenomenon in a new type of institution, namely the 'development university' (Subotzky, 1998; 2001). The main focus of this type of university is "on widening access to new kinds of home students, developing courses relevant to economic and community demands" (Scott, 1997: 121). The creation, maintenance and promotion of a culture of learning and teaching are today considered a necessary part of the mission of higher education institutions.

Massification is inclusive and demands what has been called an 'inward' orientation, widening access for previously disadvantaged social groups and meeting the needs of local economies and communities. The global university, it is suggested, has an

'outward' orientation that enhances international networks of researchers and scholars. In a 'massified' system institutions have to meet the needs of a diversity of social and ethnic groups and previously marginalised groups. They must also take account of non-Westernised intellectual and scholarly traditions all of which lead to an increase in the supply of knowledge producers, thus broadening the base and diversity of knowledge. The extent to which the university continues to produce graduates 'en masse', implies a qualitative shift in the profile of these graduates who belong to organisations from where competent judgement is often passed on university research and teaching.

The first form of Gibbons' 'massified' knowledge is the re-emergence of local knowledge as opposed to expert or abstract knowledge (see 3.8 above). The second form of such 'massified' or socially distributed knowledge is seen in the shift from Mode 1 knowledge scientific approach to Mode 2 knowledge. Massification leads to "a new mode of knowledge production that is emerging alongside the traditional, familiar one (and) affects not only what knowledge is produced but also how it is produced, the context in which it is pursued, the way it is organized, the reward systems it utilizes and the mechanisms that control the quality of that which is produced" (Gibbons et al, 1995: preface).

3.9.2 Attributes of Mode 2 knowledge

3.9.2.1 Epistemology

The shift in knowledge production "...entails an epistemological transition away from closed knowledge systems managed only by canonical norms and collegial authority to open systems that are dynamically interactive with outside social interests and knowledge structures. This shift affects both the teaching (learning) and research functions of HE institutions" (Kraak, 2004: 246). The shift is further characterised by the end of elitist and exclusive cultures, the knowledge produced and distributed by experts being accompanied by a culture that is characterised by the values of ordinary people and working class communities and by a new mode of knowledge organisation that is taking shape outside of existing academic disciplines and in part, outside the insularity of the

traditional university (Gibbons et al, 1994). The social characteristics of such knowledge produced are evidenced in programmes, including those aimed at social redress and community development.

The epistemological status of knowledge produced through Mode 2 knowledge is different. Its subjective epistemology argues that knowledge is filtered through the knower and the context. Its socially constructed-ness rejects the paradigm that denotes *a priori* consensus among practitioners around organisation, the ways of seeing things and giving priority to certain problem sets. Mode 2 knowledge derives from a totally different context that is different from the one that prevailed before the rise of specialised, disciplinary science in the nineteenth century when the context might have been described as non-disciplinary (Gibbons et al (ed) 1994: 27). While Mode 2 knowledge evolves from a strong disciplinary context, the taxonomy of the latter is found inadequate for the purpose of knowledge production in the twenty-first century. The intellectual agenda for Mode 2 knowledge is not set within a particular discipline nor is it determined by the professional interests of academics. Instead it is envisaged at the outset and provided in the context of usage. This mode of knowledge production draws upon a diverse array of knowledge resources that have to be (re) configured according to the problem at hand. It is "multivariant, unsystematic and even anti-coherent" (Scott, 1995: 143-145). While in Mode 1 knowledge problems are identified from within the 'scientific community' in Mode 2 knowledge problems are identified by external actors from the economy and society, with knowledge created through the course of "permanent negotiation" among the parties (ibid.). It is created in the context of broad social and economic conditions. Its approach is heuristic in that it describes the experience and nature of the phenomenon as it presents itself to consciousness without the necessary recourse to theory. Mode 2 knowledge has different imperatives, dynamics and attributes that are in tension with the traditional, conventional way of doing things and its theoretical-methodological core is locally driven and constituted. Its socially distributed-ness has five principal characteristics:

- a diversity of centres or places where research is being carried out

- a continuous broadening of the base of knowledge through interaction among producers
- knowledge flows happen through connected-ness around problems across the boundaries of disciplines
- the ebb and flow of connected-ness happen according to the type and number of problems to be solved that are not determined and channelled by disciplinary and institutional structures
- knowledge growth is heterogeneous and new sites of knowledge production emerge continuously, which in turn provide further combinations and configurations, also of researchers (Gibbons, et al, 1994: 3-34).

Gibbons' 'socially constructed knowledge' is being promoted in South African higher education for a 'socially engaged knowledge generation' (Pretorius, 2003) and with some reservations "...the notion of socially engaged knowledge generation is propagated as an approach to academic practice that is aimed at both contextualizing teaching and research for optimal social impact and maintaining the institutional integrity of the university by keeping intact core institutional features" (Ibid: 1)

In an age of high and information technology "Mode 2 knowledge is critically dependent upon the emerging computer and telecommunication technologies and will favour those who can afford them. The interactions among these sites of knowledge have set the stage for an explosion in the number of interconnections and possible configurations of knowledge and skill. The outcome can be described as a socially distributed production system. In this system communication increasingly takes place across existing institutional boundaries. The outcome is a web whose nodes are now strung out across the globe and whose connectivity grows daily" (Gibbons, et al, 1994: 10).

3.9.2.2 Application-based

The humanities and social sciences are application-based in the sense that ideas and practice are intimately related. The cumulative knowledge production in the natural

sciences during Kuhnian normal science makes a clear separation between science and politics which in the humanities is not tenable. Such an approach implies that knowledge production is carried out in the absence of some practical goal, with exceptions being the applied sciences such as engineering and more recently computer science. Mode 2 knowledge is generated within a context of application. This is not the same as applied science because often there is no pre-existing science to apply. "...in Mode 2 knowledge the context is more complex. It is shaped by a more diverse set of intellectual and social demands than was the case in many applied sciences while it may give rise to genuine basic research" (Gibbons et al, 1994: 4). The knowledge produced in this way is intended to be useful, whether in industry or government or to society generally, an imperative that is present right from the beginning. The interests of the various stakeholders and players are present from the beginning and continuously negotiated. Both supply and demand factors operate and sources of the former are as diverse as the latter forms are differentiated in the specialist knowledge it seeks. In the process, knowledge production is diffused throughout society. Another feature of Mode 2 knowledge conditions is the role of computational modelling in opening the way to develop both routines that are independent of particular applications and hence can be used to meet a wide variety of uses and of building more sophisticated techniques and instruments that will enhance the design principle and its range of application.

Application in Mode 2 knowledge is not product development carried out for industry who determines what knowledge is produced. Socially distributed knowledge succeeds the narrow confines of preparing a learner for a vocation or profession through what the Technikon sector advocates as 'a partnership between a higher education institution an employer and a learner' or through the application of 'theory and practice' and the acquisition of practical skills to serve industry (CTP & SASCE June 2000: 6). It includes much more than commercial considerations. "...a fundamental shift is necessary for academics from seeing the role of the university as providing applied knowledge to help in the solution of problems, to one in which the university is *jointly responsible* for social change...the institution becomes an advocate for social justice" (Subotzky, 1998: 20). A comparison with New Zealand between 1992 and 2003 is instructive. Characterised by

fiscal constraints and crises in the nature of knowledge and teaching, the scope and objectives of the curriculum and governance of institutions and confronted by the "radical challenges from politicians, bureaucrats and powerful business groups to traditional conceptions and practices of education", New Zealand's own Green Paper represents an expression of the 'needs of the market' as well as a compromise between an extreme form of 'consumer-driven, fully marketed' education and the needs of the public and society (Roberts, 1997: 71).

3.9.2.3 Trans-disciplinary

The organisation of the traditional, modern university arose on the foundations of disciplinary specialisation of knowledge. Mode 1 knowledge refers to a form of knowledge production that is consonant with the Newtonian model of science that specifies the cognitive and social norms and the rules of legitimacy. Gibbons' argument is that universities are currently organised in research in (and by implication in teaching) accordance with Mode 1 knowledge that is produced, categorised and disseminated according to *disciplines*. For him the relevance of higher education in the twenty-first century must be assessed in terms of the imperative to adapt and respond organisationally to the new mode of knowledge production. In the context of internationalisation and globalisation the adaptive responses by HE institutions show a reinforcement of this new mode which reflects a fundamental shift away from Mode 1 knowledge production. The new trends in knowledge production demonstrate a definite change in the way knowledge is produced and organised, the contexts in which it is pursued, the incentive system it utilises and the mechanisms for quality control. "It is our contention that there is sufficient empirical evidence to indicate that a distinct set of cognitive and social practices is beginning to emerge and they are sufficiently different to require a new label or whether they can be regarded simply as development that can be accommodated within existing practices. The final answer to this question depends partly on acquiring more data and partly on how Mode 1 adapts to changing conditions in the economic and political environment" (Gibbons, 2003: 1).

Attempts are made to discern multi from inter- and trans-disciplinarity (Jantsch, 1972) which have led to multi-disciplinarity being characterised by the autonomy of the various disciplines and the co-operation that occurs in a common theme but under different disciplinary perspectives. Interdisciplinary is characterised by the explicit formulation of a uniform, common terminology and methodology. Co-operation consists of working on different themes but within a common framework that is shared by the disciplines involved. Trans-disciplinarity must be distinguished from rhetoric and from the nostalgia of inter-transdisciplinarity that goes back to an age when the 'unity of science' appeared possible (Weinberg, 1993).

Multidisciplinary design is the grouping together of various disciplines, sometimes without apparent interconnection and several discipline specialists working side by side in an additive way. In pluridisciplinary design, disciplines assumed to be more or less related are grouped together. In interdisciplinary design there is close interaction between two or more disciplines. Interaction within and interdisciplinary setting involves communication of ideas; mutual integration of organizing concepts, methodologies, procedures, epistemology and terminology; joint data organization; team teaching. Cross-disciplinary design is type of design where planning cuts across a variety of disciplines. Transdisciplinary design implies an even higher level of interaction and teamwork, fertile collaboration of ideas and synthesising of scholarly perspectives. There is mutual interaction in organizing concepts and methodology, and themes transcend several disciplines and include conceptual frameworks that go beyond the domains of particular disciplines, their methods and epistemology (Ntshoe, 2003: 62).

In Gibbons' thesis trans-disciplinarity arises if research is based upon a common theoretical understanding accompanied by a mutual interpenetration of disciplinary epistemologies (Gibbons et al 1994: 29). Co-operation leads to a clustering of disciplinary rooted problem-solving and creates a common theory. Though Mode 2 knowledge production takes its starting point from the intellectual frameworks of all those who participate in the search, a Mode 2 knowledge framework eventually evolves which constitutes a new point of departure from which further problems may arise. Mode 2 knowledge creates an innovative environment in which knowledge flows more

easily across disciplinary boundaries, there is mobility in human resources and research is conducted more openly and flexibly.

"We see the emergence of a new mode of knowledge production as resulting from wider societal and cognitive pressures. It arises out of the existing dysfunctionalities and breakdowns of disciplinary modes of problem-solving and emerges once sufficient disturbances shake up the system of knowledge production" (Gibbons 1994: 29). The increase in further specialisation of scientific knowledge and its diversification into ever more narrow areas provide the context for Mode 2 knowledge. These specialisations and the speed (as a result of information technologies) with which they happen signal the breakdown of a common understanding and language across scientific disciplines and trans-disciplinarity has become a value in its own right.

To sum up trans-disciplinarity does not refer to a mere assembly of a diverse range of specialists working in teams. The shape of the final solution is beyond that of any single contributing discipline. Trans-disciplinarity has four features: (a) it develops a distinct but evolving framework to guide problem solving efforts which are not developed first and then applied. The solution does not arise solely or mainly from the application of knowledge that already exists, even though elements of this can be entered into, but finds its creativity and theoretical consensus from the disciplines involved; (b) the empirical and theoretical contributions are made to knowledge and not necessarily to disciplinary knowledge. Trans-disciplinarity develops its own distinct theoretical structures, research methods and modes of thinking and practice and the direction of accumulative knowledge may travel in different directions after the solution of the problem; (c) results are not necessarily reported in professional journals or at conferences. Instead they are communicated to those who have participated while subsequent diffusion occurs as the original participants move to new problem contexts; (d) trans-disciplinarity is dynamic with a particular solution becoming a cognitive and application site for other contexts and configurations and from where further advances can be made.

This Mode 2 knowledge attribute is also described as 'a clustering of disciplinary rooted

problem-solving methods' (Jantsch, 1972: 172). While it is arguable that the institutionalisation of a field as trans-disciplinary may in the long run become a discipline itself, in Mode 2 knowledge it is essentially a temporary configuration and thus highly mutable. The orientation is towards and driven by the solution of the problem. At a theoretical-methodological level the knowledge produced is locally driven and constituted and highly sensitive to further local mutations depending on the context of application. "A trans-disciplinary mode consists in a continuous linking and re-linking in specific clusterings and configurations of knowledge which is brought together on a temporary basis in specific contexts of application" (Gibbons et al, 1994: 29).

The distributed and applied nature of Mode 2 knowledge means that research and teaching cannot remain within the confines of a single department or faculty. New institutional arrangements are necessary, linking departments within and across and linking higher institutions with government, industry, private consultants and other producers of knowledge. Higher education institutions are "now only one knowledge producing agency amongst many in an economic order where knowledge and skill are the principal commodities being traded" (Gibbons, 1998: 30).

3.9.2.4 Heterogeneity

The new mode of knowledge production that shifts the emphasis from university-led production of knowledge to more socially distributed, problem-oriented (Gibbons et al, 1994) and community-oriented (Subotzky, G 1998) approaches, has become institutionalised in some universities. Developments in information technology and the need for flexible arrangements and innovation have significantly changed patterns of research and development and this has influenced the production of knowledge and in turn higher education (Gibbons et al 1994; Kraak, 1995; Gibbons 1997; Scott, 1997; Slaughter and Leslie, 1997; Polster and Newson, 1998; Subotzky 1998; Gibbons 2001).

Mode 2 knowledge is diffused over a wide range of potential sites. It occurs in different contexts. It is embodied in people and the way they interact in socially organised forms

and has tacit 'un-canonised' components of knowledge. Due to the multiple sites and communities of researchers interacting with higher education institutions, the epistemological status of the knowledge thus produced does not follow Mode 1 knowledge disciplinary criteria. Criteria of legitimation are based on the existence of a range of possible problems that could be tackled in a specific society. The various research specialties extant in the community and all bring to bear on the identification of problems and the types of solutions best suited.

The composition of a problem-solving team is transient and changes as requirements demand. This is not planned in advance or co-ordinated and controlled by any central body. This type of knowledge production is characterised by: (a) an increase in the number of potential sites where knowledge can be created such as universities, private institutes, research centres, government agencies, think-tanks, consultancies and industrial laboratories, (b) the sites can be linked in a variety of ways, electronically, organisationally, socially and informally, through networks of communication, (c) the simultaneous differentiation of fields of study into finer specialisations and into recombined and reconfigured sub-fields which can form the bases for further forms of knowledge. Mode 2 knowledge, therefore consists in a continuous linking and re-linking in specific configurations of knowledge that is brought together on a temporary basis in specific contexts of application. Typically, Mode 2 knowledge research groups come together in temporary teams and networks which dissolve when a problem is solved or redefined. The experience thus gained creates competencies that can be transferred to new contexts. This dispersed and impermanent way of knowledge production makes room for highly contextualised learning.

The large numbers of students from previously disadvantaged communities and from communities outside of the universities possess a variety of skills unacknowledged by Mode 1 knowledge. These students are entering universities in increasing numbers through massification and they bring their knowledge and skills to bear on a wide range of problems and situations. Ideas, methods and techniques may be produced globally but the innovation process takes place locally (Pavitt, 1991). The required knowledge may be

generated in a variety of localities but local capability is essential to be able to bring the various elements towards the solution of concrete local problems. The need to acquire specialised knowledge of all kinds impels the growth of partnerships and networks. Thus the production of new knowledge is increasingly happening within new forms of social and institutional arrangements. The critical nexus between knowledge, innovation and co-operation provides a new perspective on higher education's relationship with society and the domestic economy (Kraak, 1995: 1).

The growth and diffusion of Mode 2 knowledge are characterised as heterogeneous which is distinct from homogeneous growth. The latter growth takes place exponentially, is indefinite and only ceases because resources are finite. Heterogeneous growth by contrast refers to a process of differentiation through which rearrangements of component elements take place within a given process or set of activities, with the number of rearrangements growing rather than the number of outputs. We also see this in the trend of a single paper being produced by authors from various disciplines and institutions.

3.9.2.5 Reflexivity and accountability

Reflexivity (accountability) is "the process by which individuals involved in knowledge production try to operate from the standpoint of all the actors involved" (Gibbons et al 1995: 167) and in an "open intellectual system" (Scott 1995: 177). Global problems connected to environment, health, technology and so forth, have resulted in much public concern and even outrage and thus to the inclusion of any number of groups that wish to influence the outcome of the research process. The result is stimulation in the growth of Mode 2 knowledge production. This is evidenced in the phenomena of social scientists working alongside natural scientists, legal experts, artists and business people. This kind of diversity is also seen in interest groups demanding representation in the making of policy. Mode 2 knowledge tends to make participants reflexive of the broader implications of their work. An important reason for such an attitude is because the results of research cannot be provided in scientific and technical terms only and must be

understood by a diversity of stakeholders and geared towards implementation. The accountability of participants is also towards those outside the scientific and technological system. This lends toward social accountability.

3.9.2.6 Quality control

Quality control has two dimensions, institutional and cognitive. The former refers to the spatial position of a research activity in the cognitive landscape and the latter refers to the social organisation in which the research is performed. Quality control relates to mechanisms that define what problems are to be pursued, how they should be tackled and which results will count as valid. In Mode 1 knowledge a provisional consensus is established among a community of practitioners located in one or more institutions. The process to maintain standards is protected in order to maintain academic autonomy. By contrast, the transient nature of Mode 2 knowledge makes the backing up of stable institutions highly unlikely and even superfluous. The kinds of control are more diffuse and reflect the trans-disciplinary nature of the problems being addressed. It takes on temporary forms, exhibits fluid contours and norms and occupies temporary institutional spaces which can accommodate a diversity of knowledge producers with different institutional affiliations.

Success in Mode 1 knowledge might be described as excellence defined by disciplinary peers and reflects a perception of quality as judged by a particular community of academics. Quality control receives its credibility and scientific authority from a concept of what constitutes good science or best practice at a particular juncture in the history of a society. For Mode 2 knowledge success would have to include additional criteria such as usefulness, efficiency and the contribution the work has made to the overall solution of the problems. Mode 2 knowledge quality control is guided by a good deal of practical, societal, policy-related concerns, so that whatever knowledge is produced, the very specific environment consisting of the relevant stakeholders will have to be taken into account.

3.10 IMPLICATIONS OF MODE 2 KNOWLEDGE FOR HIGHER EDUCATION

3.10.1 Curriculum development

South African higher education institutions, in particular, universities, have had much freedom about what, how and when to teach. Until the new higher education qualifications framework and its descriptors (July 2004) become official, qualifications continue to be based on National Technikon Instructional Programmes in the RSA (NATED 02-116 (1997) and the SAQA registered qualifications. NATED registers qualifications, prescribing few boundaries for purpose or design while the NQF signifies the scope and outcomes quite specifically. Thus university academics continue to develop and teach within a disciplinary framework, utilising their own practices based on their intrinsic values. Their traditional curricula are based on the dominant canonical assumptions about the need for structured, linear, hierarchical learning with students having been socialised into the rules, rituals and objectives of disciplines. Further, academic functions, professional autonomy and managerial imperatives are increasingly linked to the demand for increased autonomy even though this is sometimes defined as being "actively and continually responsive to the public interest" (Polster and Newsom 1998: 6). "The quest for greater and more state control is based on the flawed assumption that the state can best 'steer' higher education institutions in the direction of what is too loosely called *transformation*. There is no evidence of this. On the contrary, there is more and more evidence that profound policies and detailed plans tend to have very little effect on the day to day operations of institutions – with one exception: the manipulation and allocation of funding" (Jansen, 2004: 9). But the state in South Africa has intervened directly, through its various policies National Qualifications Framework (NQF), Higher Education Act, and National Plan for Higher Education (NPHE) not only in the types of programmes that should be designed, but how they should be designed. "Operating within the requirements of the NQF demands a shift to a more technical paradigm, in which vocational/human capital discourse is overlaid with radical and humanist discourses ... The current demand to be accountable to the DoE for their educational

practice and to be subjected to quality assurance is often perceived to be uncomfortable if not threatening" (Luckitt, K 1998).

To apply the letter and spirit of the NQF demands a new mental model, one that places learners in all their diversity, at the centre of the learning process and one that impels academics to work in teams and to teach towards the achievement of stipulated outcomes. This means that lecturers will begin the development of the curriculum with the end point, namely, the outcomes and then design programmes that will achieve them. These outcomes are specified by both the demands of the disciplines/subjects/unit standards and from the established socio-economic needs of the country through its economic sectors. The outcomes-based approach also demands a new mental map or model that is able to align teaching methods, activities and assessment to stated outcomes.

3.10.2 Collaboration and partnerships

The Gibbons thesis presents an opportunity for HE institutions to reassess their role and status in societies in the developing world and to meet their needs. Institutions of higher education have lost their monopoly on skills development and knowledge production, a trend that will certainly lead to the further 'democratisation' of the processes (Scott, 1997). In order to remain relevant, higher education institutions must adapt to an environment that is characterised by collaboration and complexity. The objective of massification and increased access for black students in South African HE implies the diffusion of graduates trained in research methodologies and centres of research outside the academia. The parallel expansion in the numbers of potential knowledge producers and suppliers coupled with an expansion of the need for specialist knowledge create the conditions for the emergence of Mode 2 knowledge (Gibbons, 1998: 33-34). No single knowledge producer can afford all the knowledge resources that are needed to maintain leading positions in international competition. A most efficient way to ensure access to new knowledge is by participating in collaborative arrangements.

HE institutions must come to grips with the key elements in the assessment of their role which are "understanding complex systems, an intellectual orientation towards problem-solving, the use of computer simulation and modelling techniques. Teamed involvement of broad ranges of interest and expertise.....As soon as one begins to focus on understanding complex systems, the need for different types of expertise becomes obvious - and the need for partnerships and alliances becomes imperative" (Gibbons, 1998: 54). Gibbons' proposal for collaboration and partnerships, the sharing of expertise and resources is supported by other commentators. In linking the purpose of higher education research to the solving of social problems, Terezini argues that the emphasis on the 'narrow and single conception' of research should be complemented by that which makes a positive difference to the lives of people (Terezini, 1996). He suggests that research continues to illustrate the valuable role of higher education in the important processes that underlie our society and culture. Other related areas of research that should receive attention include the impact of higher education on specific communities and collaboration which "is seen as important in strengthening the role of higher education in society and in higher education's meeting the needs of society more closely" (ERIC 1996: 1; 3).

The new collaborative roles of the higher education sector lead to the establishment of new institutional arrangements with government, the private sector, and with other institutions both nationally and internationally. The internationalisation is aimed at improving and extending the international links and programmes and raising the consciousness and reputations of institutions. The new information technologies are a key factor in this search. The impact of computer-based knowledge systems, communication technologies, including the Internet, is profoundly affecting higher education. A caveat may lie in the fact that knowledge becomes increasingly, centralised in the hands of those who have the resources (money) to access to the information technologies.

By opening up the university it is possible to establish interactive, collaborative and heterogeneous communities that think across disciplines. It represents the socially distributed knowledge that Gibbons proposes.

3.10.3 Integration of Education and Training

Over the last year or so, many new programmes have entered the higher education sector ostensibly guided by the new National Qualifications Framework Act. Future researchers may want to explore more widely compliance with the provisions of this pending new Act than what this study is able to do.

The integration of the DoE and Department of Labour (DoL) has not happened as envisaged in policy texts. There is a need for meaningful links between the two, in addition to links with key economic departments such as Trade and Industry, Arts, Culture, Science and Technology. Divisions need to be bridged in order to ensure the development of comprehensive and co-ordinated human resource and skills development strategies. This will hopefully result in a new culture of consultation and broad accountability transforming how researchers work. Research is now crowded with a multiplicity of epistemologies and not all of them would be considered 'scientific' or 'academic'. Knowledge produced in this way does not sacrifice its reliability. But researchers do lose their autonomy and do not have the instruments for quality control such as peer review at their disposal. The new quality regime proposed for Mode 2 knowledge production is multiplying the epistemic criteria and demands by society. In a Mode 2 knowledge society the information that is produced does not only have to be reliable, but needs to become socially accountable and robust. The results of research are open for questioning, discussion, contestation and negotiation.

Many academics read policy as regulation and prerequisite for financial viability, thus losing the educational value of the new higher education policy (Jansen 2001: 169).

It points toward the crucial need, at a micro level, for staff in higher education to examine the new policies in relation to the core business of their institutions which is to generate and incorporate knowledge into their learning programmes that is concurrent with the new policy and visions. The task has as much to do with knowledge production and integration as it has to do with a conception of what quality is.

In the context of declining financial support from the Ministry of Education, the sector necessarily relies upon either other governmental departments or on non-governmental actors such as the corporate sector. The pending co-operation between the ministries of education and labour is far from becoming a reality. The latter has taken a crucially important view on the relationship between education and training of which its emphasis on learnerships is the most important. In order to enhance and strengthen the skills levels of workers in the country and to promote the implementation of learnerships a training levy is imposed on employers. The National Skills Act compels organisations to submit workplace skills plans to the relevant sector education and training authority (SETA). A SETA has to devise a sector skills plan and implement it through learnerships, by approving workplace skills plans, by allocating grants to employers, training providers and learner-workers and by monitoring education and training in its particular sector. The Skills Development Act (1998) and the Skills Development Levies Act (1999), respectively, oblige employer organisations to set aside one percent of their annual payroll for the training and development of their workers. It is the function of the National Skills Authority (NSA) to implement the national skills development strategy and to monitor the performance and report on the progress of the sector Education and Training authorities (SETAs'). The essence of the Skills development strategy is the harnessing of workers as competitive resources for the global economy.

Table 3.5 Distribution of employed in economic sectors 2000-2003

Sector	2000	2001	2002	2003
Agriculture	1 694	1 394	1 538	1 197
Mining	531	504	482	503
Manufacturing	1 576	1 627	1 614	1 634
Electricity	82	93	85	86
Construction	639	589	544	626
Trade	2 426	2 916	2 305	2 451
Transport	551	554	556	563
Business services	928	985	1 033	1 079
Community services	1 994	2 000	2 020	2 265
Private households	1 205	1 099	1 159	1 185

Source: Labour Force Survey, Statistics SA

Table 3.6 Percentage employed by educational qualification and gender

	2000	2001	2002	2003
Men -matric plus	36.2	37.8	40.9	39.7
Women -matric plus	36.1	37.2	50.5	41.5
Men- less matric	62.7	61.0	57.9	64.8
Women -less matric	62.9	62.0	58.7	57.3

Source: Labour Force Survey, Statistics SA

Table 3.7 Apprenticeships and enterprise training

Type Of Training	1986	1988	1990	1992	1996	1998	1999
Apprentice-Ships	29 826	23 416	24 448	25 785	22 015	18 546	16 577
Enterprise Training	288 633	318 025	320 070	283 664	58 004	110 278	61 145

Sources: Kraak et al, 2002; ETDP Annual Report, 2004/2005

Table 3.8 *Decline in Apprenticeship training*

Type of Training	1986	1988	1990	1992	1994	1996	1998
Apprenticeship	298 26	234 16	244 48	257 85	22 015	18 546	16 577

Source: Kraak, et al. 2000.

Table 3.9 *Increase in Learnership training- Agreements registered*

2002/03	2003/04
25 341	69 306

Source: Department of Labour NSDS Implementation Report 1 April 2003-31 March 2004

Table 3.10 *Number of Learnership Agreements registered per level (NQF levels 1-8)*

Total	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8
62 115	3 765	12 125	5 702	19 414	4 700	2 548	13 826	0

Source: Department of Labour NSDS Implementation Report 1 April 2003-31 March 2004

In quality control many actors work together, making knowledge socially accountable. A wider range of criteria is necessary for assessing quality control; the production is reflexive. “...the environment of research already structured by application or use will have to be taken into account, making room for multiple criteria not only in general, but also in relation to specific expectations and results” (Gibbons 1994: 18)

3.11 SUMMARY

“For many, Mode 1 is identical to what is meant as science. Its cognitive and social norms determine what shall count as significant problems, who shall be allowed to practise science and what constitutes good science. Forms of practice which adhere to these rules are by definition scientific while those that violate them are not” (Gibbons et al, 1994:2-3). The emergence of Mode 2 knowledge calls into question the adequacy of these familiar forms of knowledge production by higher education institutions and universities and for the subordination of Mode 1 knowledge to Mode 2 knowledge.

Under the impetus of globalisation and massification it is not only the boundaries between nations that are dissolving but also between institutions and disciplines. Such dissolution makes possible the rise of ‘a distributed knowledge production system’ (Gibbons, 1994: 1-11; 34-42; Pretorius, 2003: *no page numbers indicated*). This system is specific, applied, functional and generated by producers outside the academy and challenges traditional conceptions of what higher education is, what higher education qualifications are and the question of relevant and legitimate knowledge. Knowledge production and dissemination through research and teaching is no longer self-contained activities carried out in the university. Today these activities involve interaction, communication and negotiation with a variety of other knowledge producers. This is facilitated by the new communication and information technologies. The heart of the Gibbons thesis is that universities in the new millennium will have to become innovative in both quality and in diversity. Different kinds of links with communities and society at large present ways in which knowledge can be produced that will solve the problems of society. Higher education institutions will also have to come to terms with the fact that there are a plethora of industrial and commercial organisations that are active in research and knowledge production.

Increasingly, both industry and government see the problem less as a need to generate more knowledge than of making use of what is already available; less in terms of supporting basic

science than in terms of application of knowledge and wealth creation (Gibbons et al 1994: 54).

The search for solutions to the complex problems of society means that higher education institutions have to move outside the strictures and structures of traditional academia. The disciplines in Mode 1 knowledge carry a distinction between a theoretical core and other areas of knowledge, between what is fundamental and what is applied; and theoretical insights are translated into applications. Mode 2 knowledge is discovered in context, in a constant flow between fundamental and applied, between the theoretical and the practical and it shifts away from the search for fundamental principles towards modes of enquiry oriented towards contextualised results. Results fuel further advances. The key injunctions for the production of Mode 2 knowledge are teamwork, partnerships and collaboration and this has changed the ways in which higher education institutions are being organised.

Organisationally the modus operandi change as

- researchers work in teams on problems set in complex social contexts
- problems are transient and require rapid, flexible responses
- participation in these problem-solving contexts is necessary
- sharing of intellectual resources and capital is necessary to gain an edge
- co-ordination is horizontal rather than vertical
- team members communicate frequently and informally (Gibbons M 1999: 77; 81)

This new role is leading to the establishment of new institutional arrangements with government, the private sector and peer institutions both nationally and internationally. As a result the real academic unit has changed dramatically, with the establishment of transient research teams in place of the individual, often isolated academics; while the autonomy of the faculty has been replaced by intra- and extra- faculty teaching and research. Organisationally, Mode 1 knowledge is hierarchical and tends to preserve its form, while Mode 2 knowledge is more heterogeneous and transient with each employing

a different type of quality control. Heterogeneous growth gives rise to "density of communication" (Gibbons et al, 1994: 18). The phenomenal growth in information technology happens both as a result and as a determinant of communication between science and society, among scientific practitioners and "communication between the entities of the physical and social world" (Ibid: 19). In comparison with Mode 1 knowledge, Mode 2 knowledge is more socially accountable and reflexive. It includes a wider, more temporary and heterogeneous set of practitioners, collaborating on a problem defined in a specific and localised context (Gibbons et al 1994: 3) and who are accountable to one another.

Although Gibbons essentially had research in mind, the distinctions made between Mode 1 and Mode 2 knowledge are also useful for learning and teaching with important implications for curriculum design and development. The knowledge requirements and outcomes to be achieved in Mode 2 knowledge programmes do not necessarily coincide with those of traditional disciplines while the philosophy of learning and teaching is founded on different premises such as for example radical constructivism (see chapter 5 below).

CHAPTER 4

RESEARCH DESIGN

4.1 INTRODUCTION

In this chapter I presented the methodology and design used to investigate the problems and aims as defined in chapter one. The methods of investigation were multiple and primarily qualitative with the main purpose of empirically verifying 'the hypothesis' that Mode 2-type knowledge existed in higher education. Qualitative methods were able to yield description of the details and dynamics of the phenomenon (the process of

knowledge production and its implementation). Descriptions were captured in the documents and in the viewpoints of participants. Through the selection of a single case study from a wide net of Mode 2-type knowledge programmes, common images emerged (with important variations). In order to reduce those images to standardised ones there was need to complement the qualitative research methods with quantitative survey methods.

4.2 RESEARCH METHODOLOGY

Qualitative methods were the most appropriate for the study as it sought to investigate questions about an institution, its historical and missionary context and a programme in all its uniqueness and diversity. Understandings and explanations of both institution and programme were achieved through an examination of their documents as well as through insights and understandings of the participants in the programme. A variety of qualitative strategies yielded descriptions, statements, quotations, viewpoints and understandings that could explain how and why knowledge production took place within a micro-setting within the higher education sector. Qualitative methods also ensured rich, in-depth information about both the participants and the programme even though they could not yield a large degree of standardised responses on all the relevant issues. In order to reduce important information about some of the key concepts to standardised responses I was obliged to use quantitative survey methods. It applied specifically to four of the questions, namely the prioritization of policy issues, compelling Mode 2 knowledge issues, the difference between technikon and university education and the definition of competence.

4.3 SELECTION OF SITE

The primary site was a programme group within a technikon as a sub-type within the higher education sector. Historically, technikons emerged from the technical institutes in the 1920s' and the technical colleges in the 1930s' (Cooper & Subotzky, 2001). They became part of the higher education system by an act of parliament in 1967 and the term

'technikon' was used for the first time in 1979, when the Technikons of Cape (Cape Town), Natal (Durban) Pretoria and Witwatersrand (Johannesburg) were established (Cooper & Subotzky, 2001: 3-10 and 21-35; Committee for Technikon Principals, 2002). Other technikons that followed were those of the Vaal Triangle at Vanderbijlpark and the Port Elizabeth (1967) and Free State (1981) bringing their number to seven. Alongside these seven 'white' technikons there emerged seven 'black' technikons, namely ML Sultan in Durban, Peninsula Technikon in Cape Town, Mangosuthu Technikon just outside Durban, Northern Transvaal Technikon north of Pretoria, North West Technikon in the old Bantustan of Bophuthatswana, the Eastern Cape Technikon in the old Bantustan of Transkei and Border Technikon in the old Bantustan of Ciskei (Cooper & Subotzky, 2001). In 1980 the external studies department of Witwatersrand technikon became an independent distance learning department under the name Technikon RSA (TSA Website, 2000). With fifteen technikons and twenty-one universities the higher education system comprised of thirty six institutions (Cooper & Subotzky, 2001).

Often assessed against the international trends of the polytechnics in the United Kingdom, technikons represented a study level between matriculation and the primary university degree (Committee for Technikon Principals, 2002). This changed in 1993 when by an Act of Parliament technikons were allowed to offer degrees up to doctorate level, equivalent in status to those offered by universities. Apart from the 'logic of separate development' of the apartheid system, the rise and purpose of technikons was closely linked to the need for manufacturing industry for large-scale capitalism after the Second World War (Cooper & Subotzky, 2001) and they offered a variety of professional and commercial courses in fields such as secretarial studies, management, pharmacy, hairdressing and mining.

The original and primary role of the Technikon RSA in 1980 was the provision of correspondence-type education for the national police services (Technikon SA Website, 2000; Technikon SA Prospectus, 2002). In 1989 the campus of the Technikon was moved to the West-rand suburb of Florida with a student enrolment figure of 19 215, a headcount increase of 17 015 (773 %) from the 2200 in 1980 (Technikon SA Website,

2000). By then it was offering a variety of programmes but with the emphasis on police, management, business, and basic science programmes. In August 1993, the Technikon launched its new identity with a new brand name, Technikon SA, and a shift from correspondence to distance learning. In the same year legislation allowed technikons to confer degree qualifications up to the level of doctorates and TSA's regional offices were launched in all of the nine provinces in order to consolidate and expand its new status (ibid).

The selection of the TSA as a site of investigation for the study was made out of convenience. As I had been a full-time staff member of the institution since 1996, I had more knowledge and understanding of its role in the higher education sector than of any other technikon. I also considered it an interesting site as its history and mission could not be placed in strait-jackets. It was like other 'white' technikons but also very different and unique.

Along with the other technikons, TSA has not been immune to the radical changes in the sector, both quantitatively and qualitatively. The last decade has seen it being transformed, qualitatively and in the diversity of its student base, with black students accounting for 90 percent of the numbers, which hovered between 85 000 in 1999 and 75 000 in 2002. Of these, rural and non-English speakers accounted for 35 percent, with women accounting for 30 percent of the overall student population. According to its website, the career and work-based qualifications offered by TSA received strong impetus from the new National Higher Education Policy frameworks and legislation all of which validate and reinforce the road taken by qualifications development at TSA. A notion of 'education for the people' became part of its vision and called for far greater flexibility of entry and exit, the provision of quality courseware and broader levels of learner support. Its *Winning Asset for the RDP* describes learners' right to open access, to study at their own pace and time and to be free to combine modules from different programmes. It is a moot point whether these missionary goals were actualised, one that requires investigation by future researchers.

As one of the two major distance education institutions, the total income per full-time equivalent (FTE) student of TSA was 58 percent lower than that of Unisa (Cooper & Subtozky, 2001: 174) in 1990. As with other technikons, TSA sources of funding have been derived from the following as calculated by Bunting (Bunting I, 1994: 164-181). These have been made up of: government subsidies (54 percent), investment income and private gifts (13 percent) tuition fees (15 percent) government grants and contracts (2 percent) and other sources (16 percent). The latter is sourced mainly through partnerships. In 1990, TSA was the technikon with the lowest FTE income at only R2.9 thousand per enrolled student (ibid: 171).

4.3.1 Selection of programme

The TSA Division (Faculty) of Community Sciences offered programmes that provided students opportunities to experience workplace work. The Child and Youth Care/Development Programme prepared professionals to work in a variety of community projects and it was designed to provide a structured framework within which students were expected to possess and develop certain attributes and qualities for the workplace (Proposal for Course Development, July 2000). The academics in the programme group were trained in academic, professional and or industry contexts, a situation that at first glance gave the impression that it would facilitate a transition to Mode 2 knowledge production. Descriptions of the learning programme by the participants though, ambiguously, addressed the demand-side of learning and teaching rather than the supply-side. Informants had a view of knowledge production which they defined in typical technikon parlance as 'co-operative education' but in practice demonstrated differently. Blooms taxonomy of knowledge was the most familiar and staff members were generally unfamiliar with the Gibbons thesis. But there was a range of interest and understanding of Mode 2 knowledge as a typology of knowledge production and some of the attributes of Mode 2 knowledge were visible in their programme.

The qualification was conceived in 1996 in response to a "critical national imperative, given the degree of alienation experienced by many township youth from mainstream society" and went through intensive consultation with all the major national stakeholders. As a manager in the specialist support agency of the institution that was responsible for the co-ordination of the internal approval process of qualifications, I was privy to the knowledge base, nature and curricula of the more than three hundred programme offerings in the four faculties of the institution. The choice of the Child and Youth Care Programme offering was both convenient and opportunistic as I had 'more intimate' prior knowledge and understanding of the programme and its dynamics. It was possible to access documentation that was freely available on the internal website of the institution as well as that of the programme and the programme group. In addition, I was aware that the programme group had kept a meticulous chain of written records of the development and design of the programme. Crucially important for me was the fact that the programme, although typical of technikon-type programmes, was also unique in its approximation of Mode 2 knowledge. My official and unofficial association with individual lecturers and administrative staff in the programme group and my unofficial association with an external stakeholder and partner (National Council for Child and Family Welfare/ Child Welfare South Africa) of the programme and group greatly facilitated the choice. I had attended at two national conferences of this NGO in 2001 and 2002 and had acquired important information about their characterisation of work-ready students.

The Child and Youth Care programme was offered at certificate, diploma and first degree levels and was made up of combinations of learning programmes and modules delivered to a total number of 232 students, the majority of whom were based in Gauteng province. Each level included an 'experiential learning' / workplace component.

4.3.2 Selection of participants

Only the twenty-two programme staff members working in the learning programme on full and part-time bases were eligible. They consisted of lecturers, tutors, managing/

administrative staff, researchers and facilitators. The participants very much represented a 'captive assignment' since by selecting the programme the programme staff was automatically also selected. Given my history and position at the institution I interacted professionally with the participants on a regular basis as well as socially on occasions.

4.11 Profiles of participants

	Position	P/T or F/T	Years Industry Experience	Years Technikon experience	Years University Experience	Formal Qualifications
1	Director/ Head of programme group	F/T	7	10	0	Doctorate
2	Senior Deputy Director	F/T	10	6	1	Masters
3	Deputy Director	F/T	7	3	0	Honours
4	Senior Lecturer	F/T	8	3	2	Honours
5	Lecturer	F/T	10	0	0	First degree
6	Lecturer	F/T	5	5	0	Honours
7	Lecturer	F/T	0	6	0	Honours
8	Lecturer	F/T	0	5	0	Honours
9	Lecturer	P/T	10	10	3	Masters
10	Lecturer	P/T	11	0	0	First degree
11	Tutor	F/T	2	0	0	First degree
12	Tutor	F/T	4	4	0	Honours
13	Tutor	F/T	8	1	0	First degree
14	Tutor	P/T	8	0	2	Masters
15	Tutor	P/T	0	5	5	Masters
16	Tutor	P/T	0	3	5	Masters
17	Tutor	P/T	2	2	0	First degree
18	Tutor	P/T	2	1	0	First degree
19	Senior Researcher	F/T	0	8	2	Masters
20	Researcher	P/T	6	3	0	Masters
22	Workshop Facilitator	P/T	10	0	0	Honours
22	Workshop Facilitator	P/T	5	0	0	First degree

4.12 Summary profiles

No of participants	Industry Experience	Technikon Experience	University Experience
None	5	6	15
1 - 5 years	6	11	7
6- 10 years	10	5	0
Plus 10 years	1	0	0

Participants were divided into five categories of work: directorate, lecturers, tutors, researchers and facilitators. Since the mission of the programme was the production and preparation of graduates with direct employment competencies of which crucial components were 'placement' and 'experiential learning', their profiles had to include academic experience as well as background in the industry that is, the field of youth care and development.

Together the profiles offered a relatively balanced mix of academic and industry experience. However, five individuals had no industry experience and six no academic experience. University background was clearly not important as indicated by the fact that only seven had had university teaching experience at an average of 2.8 years. Of those seven three were in the top positions in the programme group, including the Head of Department.

It was obvious that the expectations concerning tutors were lower than those concerning lecturers in terms of formal qualifications and experience which reinforced an artificial hierarchy between lecturer and teacher. Exceptions were made in the case of part-time tutors where two were appointed ostensibly based on their formal qualifications rather than their academic or industry experience.

4.3.3 DATA COLLECTION

4.3.3.1 Introduction

I began the collection of empirical data with a formalised version of a number of informal presentations to and with staff. This was executed over many months. The formal presentation contained a statement of the study – its purpose and its intention to be a submission for degree purposes. The statement was accompanied by a letter soliciting their co-operation and the rationale for selecting them. A descriptive and comparative table of the essentials of Mode 1 and Mode 2 knowledge was provided, accompanied by my own selective extracts from the Higher Education Act and the Plan for Higher Education. Relevant readings were listed and an invitation issued to appropriate them in my office or at the campus library. Here the professional support agency, of which I was a staff member, had in collaboration with the relevant librarian, created a special 'desk' on 'Knowledge Production in Higher Education'

Since I wanted to determine whether Mode 2 – like knowledge programmes existed in HE and to establish both the similarities and the differences in perceptions and interpretations of staff, I had to pursue collective and individual peculiarities as well as common and unique configurations. Individual informants often used their own terms and attached their own meanings to them. The analysis of the collected responses depended on reducing such responses so as to establish 'patterns' that would highlight how closely they approximated Mode 2 knowledge.

4.3.3.2 Documents

For the analysis of government policy documents I used, with one or two exceptions, those published between 1994 and 2001. These were the Report of National Commission on HE (1996); the White Paper (1997); Higher Education Act (1997); the National Qualification Framework (1997) the National Plan on Higher Education (2001) and the *Draft* Qualifications Framework (2004).). I also looked at supportive and conflicting commentaries on these documents and tried to capture and grasp their 'letter and spirit'.

Government documents were collected from the relevant websites on the Internet and from the Government Printer. As I was interested to find a relationship between the forces of globalisation and the making of the new policies since 1994, the impact of the Mode 2 knowledge thesis on their formulation and the debates in the higher education sector that ensued from them, I had also to study the relevant secondary literature.

Documents on the institution used for the study were limited to those found in its archives and on its Websites. In general I wanted to look at the historical, education and training contexts of the institution. I specifically I investigated its programme development and curriculum design policies and their impact on the conceptualisation and development of the programme under investigation. I was also interested to see the attitudes and approaches of the staff in relation to these policies.

The documents selected from the programme included (a) documents such as learning materials, tuition schedules, staff directories, minutes of the meetings attended by me, workshop reports and reports of discussions with employers. Some staff kept journals but felt uncomfortable giving me access, which I respected; (b) a video recording of one workshop.

4.3.3.3 Participant observation

A series of seven Programme Group workshops and one Faculty workshop took place between April 2001 and February 2003. The duration of those workshops was between one and three days. It was those held over two and three days that enabled me to negotiate space and time for the distribution and immediate collection of survey questionnaires. They were also selected, based wherever possible, on the matching of the themes of the workshops with the themes (questions) of the four surveys. Three workshops in October 2001, February 2002 and November 2002 were used for this purpose (see 4.3.3.5). The rest of the workshops served my purpose as a participant observer. The workshops took place in one of the many seminar rooms allocated by the institution for such purposes. On each of the three workshops chosen for the purposes of

the surveys I stayed for the duration of the workshops one of which was facilitated by me.

Although participants were aware that my study was conducted for degree purposes, there was a degree of 'obscurity' in the strategy which might have favoured it. Participants might not have been fully aware of the direct purpose of my participation in the workshops other than that I was one of those staff members who generally took an interest in many, if not most of the events happening at the institution. After all, as far as they were concerned I was collecting information for the study through other methods, namely through the documents, the interviews and the surveys.

The field notes of the workshops were done as discreetly as possible and they were complemented by the transcripts of one tape-recording of proceedings which is a standard practice at the institution. Notes from observations were divided into three sections (a) an objective narrative of what was said and how. This included verbatim statements, general and specific comments, descriptions and narratives by informants; (b) my interpretative comments on the proceedings. They included reflective aspects such as emerging themes and patterns, comments, the barriers, problems, need for changes and decisions, some ethical dilemmas and conflicts; points of clarification and how I interpreted what I heard. Field notes were recorded by hand except for one. Written notes amounted to hundred and eleven typed pages.

4.3.3.4 Interviews

There remained for me the potential danger of over-reliance on either oral or written data so both were used to corroborate (or not) information derived from either. But it was the oral data received in the interviews, combined with participant observation that could capture the perceptions, feelings and experiences of the participants.

A formal six-part questionnaire of ten questions each was designed and procedures for access to staff and recording of evidence were negotiated. The questionnaire template

covered as many issues as possible and definitions of terms were written in ways that I believed (or assumed) could be understood by all informants. The need for clarifying discussions was pre-empted and factored into the planning. I wanted to determine the features of the approach of staff to knowledge production through the eyes of the informants themselves. In addition I wanted to know how closely the programme approximated Mode 2 knowledge; how the perceptions and understanding of participants differed from the description of knowledge by Gibbons; what similarities were demonstrated; how the insights and understandings among participants differed; how the insights and understandings were similar or common; and how they responded to the knowledge production priorities of the new policies of both the government and the institution.

The questionnaire was distributed in April 2001 and elicited three responses out of a possible twenty-two by the deadline which was one month later. Eventually aborted, the questionnaire was replaced by four informal, open-ended focus group interviews conducted between June 2001 and November 2002. The emphasis in the interviews took as its guide the questions in the aborted questionnaire. The rather fortuitous abortion of the formal questionnaire enabled me to obtain much more interesting and unsolicited information as the informal questions often gave rise to new questions. The interviews took place in June and August of 2001 and in April and June of 2002. Two were conducted in the office of the head of the programme, one in the office of the deputy and one in the tea-room. Each questionnaire guide consisted of fifteen questions (taken from the original questionnaire) and the same questions were posed to all informants irrespective of their particular roles and responsibilities. Each interview lasted about one and a half hours. The first interview was tape-recorded as per the agreement with the head of department but was stopped midway in response to the objections of one or two participants. The rest were recorded in copious notes. Some of the participants who did not answer all the questions during the interviews provided their answers afterwards by email. Still others provided amended and additional answers also by email. In between the four interviews, questions for clarification were posed and answered by telephone and

email – altogether eleven times with ten of the twenty-two informants by email and twenty times with three or four by telephone.

I also attended three formal monthly staff meetings in July, August and September 2001 the minutes of which were distributed to all those who attended.

4.3.3.5 Quantitative methods: Surveys

The surveys were necessary for two reasons: to collect information on participants' understandings of key terms and elements; and to standardise those responses. Each of the four survey questionnaires contained one question and each was accompanied by a handout that contained the possible choices to be made as answers by participants.

Two survey questionnaires were distributed at the first workshop and one at each of the two other workshops. Questionnaires were distributed to the twenty-two participants only, except for one workshop. The survey questionnaire on the 'Prioritization of Policy Goals' was based on a synthesis of the *draft* goals as listed in the National Plan for Higher Education which was to be gazetted in 2002. The survey questionnaire on 'Compelling Mode 2 issues' was extrapolated from the Prospectus of the Center for Transdisciplinary Research in the United States of America. Those two questionnaires were conducted at the October 2001 workshop. At the workshop with the title 'The Relevance of Technikon Education' in February 2002, the survey questionnaire on 'The differences between University and Technikon Education' was distributed to all 120 participants of the workshop which included other staff members and members from external organizations. Study participants were requested prior to the workshop to mark their responses C&Y to distinguish them from the rest of the workshop participants. As there were only eleven coded responses, I took the decision to compute all responses received. The survey questionnaire on 'The differences between University and Technikon Education' was designed jointly with programme participants and it deliberately coincided with the main theme of the workshop namely 'The Relevance of Technikon Programmes'. For my part I had contributed categories derived from the works of Gibbons and from a 1999 Report

by the Centre for Development Enterprises. The workshop was organised and video-taped by the faculty and the panel of facilitators included staff from the programme group. Five ten-minute position papers on Technikon Education were presented followed by a question-and-answer session. The workshop used for the survey a questionnaire on 'Importance of Competencies' and took place in November 2002. The categories for the survey were taken from works by Michael Gibbons (1994, 2000). Additional categories were derived from a survey conducted by the Centre for Development Enterprises (1999) although the contexts and purposes of this survey were different.

In addition to the responses received on the survey questionnaire, I made my own written records 'on-site' as well as reflectively and retrospectively, using questions from the aborted questionnaire as a compass of what to record.

4.4 ANALYSIS OF DATA

4.4.1 Qualitative analysis

4.4.1.1 Documents

In analysing the policy documents of the government as listed in 4.3.3.2 above, I looked at both the letter and spirit of these and combined inductive and deductive thinking. I wanted to know how and why the documents were produced and the international and national contexts for knowledge production in which they were produced. The genesis of the new government's policy documents could be traced back to the non-governmental, anti-apartheid, liberation and trade union movements of the period before 1994. Consultation was a key directive that obliged organizations to ensure that projects and policies were shaped by the viewpoints of all stakeholders and interest parties. This practice culminated in the work of the NCHE, the first formal governmental commission for higher education after 1994. Its commissioners began a process of national and international site visits, public hearings, national conferences, workshops and solicitation of written feedback from a wide array of stakeholders. The NCHE Report laid the foundation for all subsequent policy statements, for example Green Paper, White Papers and eventually the Higher Education Act in 1997. Under the impetus of globalisation,

fiscal constraints and increased competition, the new policies placed great emphasis on research and teaching that reflected the characteristics of the entrepreneurial or market university. The main threads through all of those documents were summarised around the subsequent demands for the higher education sector: a single nationally co-ordinated system; a programme-based system; redress, equity and access with success; 'other knowledge forms' especially Mode 2 knowledge; the matching of demand and supply higher education and reliance on technology. The policies and 'politics' of the institution were determined and shaped by its vision and mission of developing and delivering 'career-oriented' and 'co-operative education' programmes in the higher education sector. In 2002, in response to the curriculum imperatives of the SAQA Act, a process of re-curriculation was begun throughout the institution with the outcomes based very much on the principle of uneven development. Some programme groups embraced the process enthusiastically while others were less passionate. The directives for programme groups were contained in a seminal document entitled 'Re-curriculation Guidelines' produced through an institutional collaborative partnership with an external non-governmental organization (SAIDE). Despite being adopted by the Senate of the institution, 'the guidelines' were never fully embraced in practice by the programme groups, with each apparently making its own interpretations of what was demanded by SAQA rather than by the institution.

The programme documents, consisting of materials produced for and by the programme group, intended to capture the development of the programme through the experiences, opinions, perspectives and concerns of participants. They contained both public documents as reproduced on the group's web-site, their private documents and of individual participants. The private documents of the group reiterated, to a large degree, the essentials of the documents on their web-site except for what was said in the interviews and in the written (email) responses received from them.

In analysing participants' descriptions of their programme, the relationship of the programme with other disciplines and their definitions of key concepts, I found that the similarities outweigh the differences. Concepts such as competence, 'graduate-ness',

'technikon education' and work-based learning; participants' views on partnerships and community development provided a picture that was more similar than dissimilar. I wanted particularly, to identify commonalities in the responses, with what Gibbons' thesis 'prescribed'. The Gibbons 'prescriptions' were already identified before the investigation began and were pursued intensely during the interviews and surveys. The records of the re-curriculation process provided a fascinating look at the similarity of exchanges among participants on the one hand and between participants, the faculty and the professional services agency of the institution, on the other.

4.4.1.2 Participant observation

Field notes, consisting of accounts of workshop proceedings, recordings of meetings, participants' quotations, participants' reflections of what happened and the video recordings of one faculty workshop, provided information that complemented the data in the documents. Where I interpreted information immediately at the workshops I found myself having to return to the informants via telephone or email to seek additional evidence or re-check what I thought I had heard. The information, gleaned from a position as participant observer, was rich, controversial and often intense and passionate. It neatly complemented the more prosaic information contained in the documents. A perennial concern for participants, as indicated in the field notes, was the ways in which the professional services agency (of which I was a member!) often "hampered" the work of the programme group because of its insistence on "control in stead of co-ordination" and its advocacy of "other old-fashioned methodologies". Participants demanded amongst many others "our need for professional independence".

The descriptive words used by participants captured the mood and the way each individual perceived the issues. Descriptive words and phrases such as "marginalised youth", "learner-centred", "facilitation rather than teaching", "technology-based learning" and "community development" served to heighten the mood of contestation and excitement at workshops. Indeed, the very conceptualisation of "technikon education as

opposed to university education" differed as widely among participants as it provided similar responses.

4.4.1.3 Interviews

The responses, as captured in the transcripts of the interviews, provided and led to two types of information: rich descriptions and patterns. In cases where participants had very specific responses to questions, they were written down verbatim as far as possible; where the responses were too long to record accurately and reliably, requests to provide them in written form were generally acceded to but was always based on the condition of anonymity. In chapter five I quoted material taken from the interviews. Some of those appeared without documentary references where individual staff members did not want to be quoted.

It was obvious that the viewpoints and opinions of participants had more in common than they had differences and thus enabled me to establish their patterned conceptions of the type of knowledge that was central to the programme vis-à-vis Mode 2 knowledge, for example: the programme's relationship with other disciplines, the group's views on partnerships and collaboration, community development and other issues. While one or two informants insisted on 'vetting' some preliminary findings the final conclusions and interpretations were my responsibility.

4.4.2. Quantitative analysis

A programme group workshop on 'Partnering the Industry' took place in October 2001 and space and time was negotiated for the distribution and immediate collection of two survey questionnaires. The questionnaire on the 'Prioritisation of Policy Goals' contained ten goals extracted from the new draft higher education policy documents. The goals were not accompanied by any descriptions thus leaving them open to the interpretations and understanding of participants. The questionnaire was distributed to the participants only and was accompanied by one survey question: 'Place the following

goals of the new HE system in order of your priority, 1 to indicate the most important and 10 to indicate the least important'. Participants had to list the items (goals) in order of priority according to their own understanding.

No clear descriptions of these goals were provided or obtained and the responses were listed in terms of actual majority numbers. Where respondents indicated an item differently from the majority their responses were not counted. Without benchmarks it was difficult to make definitive conclusions but the prioritization of policy goals in this exercise was consistent with views expressed elsewhere (*see for example 4.4.2.1 and 4.4.2.2*). A weakness lay in the question. Ranking them individually would have provided more useful results. In this case ranking all items forced informants to choose one over the other.

The second survey question was on 'compelling Mode 2 issues' and included an extract from the prospectus of the International Center for Transdisciplinary Research in the USA that described a Mode 2 knowledge Master's degree programme. The extract was distributed in hardcopy to all twenty-two staff one week before the workshop as an example. At the workshop it was again distributed and this time was accompanied by one survey question: 'Please highlight three compelling issues in the description of the qualification'. The question was designed to extract data on participants' views on the typology and characteristics of the programme.

It was obvious (and expected) that industry needs were the most compelling issue, followed by teamwork and transdisciplinarity. Only half the informants elected problem-solving and application-based learning as compelling issues. It was interesting that they separated industry needs from economic needs which may well be tied to their deliberate disassociation of teaching, learning and research, with 'macro-politics'. Or it might be the result of the reproduction of the rhetoric of 'industry education' that was endemic in the technikon sub-sector. Participants' programme-based approach focused attention strictly on immediate short-term goals as opposed to the more long-term and rather abstract goals of economic development. It tallied with the low priority for other broad,

macro-issues such as globalisation and the abstract, theoretical and intangible issue of equity.

A faculty workshop (workshop two for the study) took place in February 2002 with the theme 'The relevance of technikon programmes'. For the purpose of the study a survey instrument was designed jointly with staff and consisted of a list of thirty-four characteristics of a learning programme. The thirty-four items were selected from the literature. The survey question on the 'Differences between university and technikon programmes' was accompanied by a handout containing the list of thirty-four characteristics of university and technikon programmes. The thirty-four terms were not described but left open for interpretation by participants and they were accompanied by a survey question: 'Please make *one* tick (U or T) to each of the characteristics as either university or technikon'. Each one of the characteristics had to be allocated to either a university OR a technikon programme. Since the workshop included participants from outside the programme group and the institution, a specific request was made to programme staff to identify themselves by means of an agreed code (C&Y).

Fifteen coded (C&Y) feedback responses were among the general workshop feedback forms. I decided to base my analysis on a selection of responses from all the forms received, altogether seventy-one completed responses.

On the survey questionnaire on the 'differences between university and Technikon programmes eleven coded feedback responses were among the general workshop feedback forms. I decided to base my analysis on a selection of responses from all the forms received. There were seventy-one questionnaires completed.

The items were based on the literature utilised in the study and the handout containing the terms did not provide descriptions of them. Significantly, many of those items were subsequently verified by other experts in higher education, for example (Ntshoe 2003; Muller & Cloete, 2004). The 'own' understandings of participants were assumed. The following differences were unambiguously singled out by all informants to be peculiar to

"universities", abstract thinking, single disciplinary, faculty-based, multi-perspectival, peer-review based, cognitive knowledge, elitist, academic orientation and institution-based. Those choices were based on their own perceptions and possible lack of insight into university programmes. The use of biased words such as 'elitist' might also have been seen as negative and thus influenced informants to associate it with any other institutions but their own.

Those items clearly associated with technikon programmes were unit standard design, programme-based, collaboration-based, stakeholder review-based, informal structures, flexible planning, application-based and responsive to industry. Items that were associated strongly with both university and technikon were problem-solving (real and simulated), innovative thinking, thematic design and rather confusingly, multi-disciplinarity. The latter might have been the result of misunderstanding of the concepts. Good descriptions of the terms, as for example, provided by Isaac Ntshoe (2003) were unavailable at the time.

At a programme workshop on 'Learner Assessment' (workshop three for the study) space and time was negotiated for the distribution and immediate collection of a survey questionnaire on 'competencies'. The survey instrument was designed and consisted of a list of twenty competencies of a Bachelor of Technology (B Tech) graduate and selected from the programme literature and from a survey report by the Centre for Development Enterprises (CDE). The survey question was aimed at obtaining the views of the participants on the importance of the competencies required of their B. Tech. graduates. The instrument was distributed to the twenty-two staff only and it was accompanied by the question: 'Please rate **each** competency for your B. Tech. graduates, in order of importance with 1 indicating unimportant and 5 indicating very important'.

In addition, definitions were provided for each of the twenty competencies listed. The ratings were based on responses to a 5-point Likert scale, 1 indicating the competency was unimportant and 5 indicating that the competency was very important. The mid-point of 3 indicated that it was somewhat important.

The data collected were at ordinal level, making possible only the estimated means of the ranking, between 0.9 and 6.0. Following on the CDE survey (2000) the study took a mean of less than four to denote that informants interpreted the competencies to be unimportant.

As expected, preparation of graduates for the workplace was the most important priority. It was confusing why the widening of the knowledge base of graduates was placed as the second most important in light of the central thread among informants of 'knowledge versus competence', except if understood against the importance attached to examinations. The need for social and economic development was placed as the third most important priority which was inconsistent with views that it was not important, expressed elsewhere (see for example 4.4.2.1 and 4.4.2.2). I also expected redress and the promotion of diversity, non-racism, non-sexism and democracy to be rated higher in view of the highly publicised and numerous 'diversity training programmes' organised by the institution at the time. The promotion of public accountability was low given the prominence for partnerships; unless private industry was not considered in the interest of the public. Academic freedom was expectedly bottom of the list and in sync with the culture of 'obedience to prescriptions' in the technikon sub-sector.

At the same workshop (relevance of technikon programmes), questions about the nature and epistemology of knowledge production were asked from the audience. They were directed at the panel of speakers of whom four (out of six) were staff of the programme in the study. The answers provided by them rather ranged from those staff that saw knowledge as a commodity to those who saw knowledge in social context.

The perceptions of the informants of the importance of each competency required of their graduates are presented in chapter five. Collecting the data at ordinal level meant that only estimated means could be provided and ranked accordingly.

In terms of the description of 'graduate-ness', the importance in ranking of competencies provided insight into the thinking of staff. The importance attached to ability to solve

problems (1), learning skills (1), enthusiasm (2), ability to work individually (3), time management (3), ability to work in teams (3), results oriented (4), and work- skilled-ness (5) signalled that the definition and perception of 'graduate-ness' was in line with what informants perceived to be 'workplace education'. Further, it could be extrapolated that informants contemplated graduates to be a mix of worker and learner with ability to work individually and to work in a team, closely related. Contrary to received wisdom and information supplied elsewhere, the acquisition of typical work-skills did not top the list of competencies – for example problem-solving and teamwork. The contradiction between the ability to work in teams (3) and the ability to develop others (12) could be explained by the often rhetorical claim for teamwork and the priority attached to individual examination preparation and performance (1, 3, 3). The urgency of examinations was uppermost in the minds of participants at the time (November 2002).

Unexpectedly, oral communication (10), basic research skills (10), mathematical skills (9), computer skills (7) and critical thinking (8) were not considered very important. It was interesting that enthusiasm of graduates was placed at number two and may again be related to an emphasis on examinations or to the need of staff to have their teaching validated. It came as no surprise that competencies such as leadership and political awareness were considered least important.

4.4.3 Integration of qualitative and quantitative methods

The main purpose of the empirical investigation was to enable me to gain insight into the process of knowledge production (and implementation) as it was captured in the documents and in the viewpoints of participants. Secondly I had hoped that the data would deepen my own theoretical propositions about knowledge production in general.

The investigation was subject to an understanding of the national and institutional contexts of knowledge production. An analysis and description of the national and institutional documents seemed sufficient in this regard. But in order to 'test the hypothesis' that specific Mode 2 type knowledge programmes did exist in higher education required more than document analysis. Qualitative methods were thus designed

that could yield a more complete picture of the phenomenon under investigation. Selecting a single case study from a wide net of Mode 2 type knowledge programmes gave rise to data that could describe the details and dynamics of the programme. But I also knew that I had to keep an open and flexible mind about the design strategy. While the data revealed in the programme documents and by the participants in the case study, provided fairly consistent and common information (with important variations) I also wanted to reduce this information and standardise it and to capture the objective and focused understanding of participants of some of the key knowledge production concepts. Thus there was need to match the qualitative research methods in the design with quantitative methods. The aim with the collection of quantitative data was to enable me to standardise the responses of participants and so facilitate replication. I collected evidence from surveys within a setting that was part of the normal work of participants (workshops). However, I still felt the need to fill out the meaning of those standard responses with in-depth data and to give substance and flesh to the bones of the quantitative findings.

4.5 ISSUES

4.5.1 Reliability

The reliability of information seemed very much to hinge on my own credibility as researcher and colleague. I encountered different degrees of trust from participants, determined by many factors: the kind of past relationship I had with them, the degree to which I was 'judged' by them as a colleague and as a staff member in one of the professional agencies of the institution and the tact with which I approached them. Some of the participants were visibly uncomfortable when I entered the office for the first interview and revealed a tape-recorder. Others expressly had no objection. To a large degree I became a routine part of the programme group's activities, workshops and other events. This was facilitated by the rapport I had had with most of the participants. A caveat was that those same relationships made obtaining reliable information both easy and difficult. On the one hand it made possible some very candid responses while in others inhibition was a barrier— especially in the beginning. My dual role as researcher

and as staff member of the institution co-responsible for the 'certification' of programmes through Certification Council for Technician Education SERTEC, might have alienated some participants while encouraging them at the same time to 'give their viewpoints' in order 'to make a point'.

I resorted to old interviewing skills to set them at ease and once they were assured of the confidentiality of the information their objections and inhibitions became less obvious.

4.5.2 Validity

By using a variety of procedures it was possible to increase the validity of the study and its findings. A process of triangulation ensured that I used information obtained in the documents, through participant observation, in interviews and through surveys to establish reliable answers to the research questions. While a case study methodology had its own drawbacks, it was through such a methodology that I was able to capture the insights, viewpoints and perceptions of informants in 'thick-rich' descriptions. To strengthen validity I repeated questions posed in one interview in the next one, allowed participants to submit their responses in writing afterwards, allowed them 'to vet' preliminary findings, raised key issues and questions in different settings: in the interviews, in the workshops and in the surveys. I also tried record the field notes with emphasis on what was said rather than on how I interpreted it.

The fact that I was one of those staff members who generally took an interest in many, if not most of the events happening at the institution, lent some 'discreet obscurity' to my participant observation strategy in that participants were not fully aware of the direct purpose for my participation in the workshops. After all, participants assumed that I was collecting information for the study through only through documents, interviews and the surveys. In this way the validity of evidence was reinforced.

4.5.3 Ethical issues

Informants were clearly willing and able to provide answers but at the same time they placed emphasis on confidentiality and privacy. The first interview was tape-recorded with the permission of the head of the programme group but it was stopped midway in response to objections from two or three participants. For the sake of maintaining and strengthening healthy relationships with all participants, the interview was recorded by means of copious notes instead. There was a strong feeling among a minority of participants that neither their programme settings and physical environment nor their names and identities be identifiable in print. It was difficult to make simplistic distinctions between public and private and I argued that I had no choice but to identify the programme but would protect names from being printed. My experience in oral history reminded me that even where participants co-operated in providing evidence, they might still feel unhappy or embarrassed when reading it in print despite my sincere intentions. Issues which might well have served as constraints were the negative views of participants on the possible impact of the post-study on their programme and their concern that the study was intended solely for the award of a degree.

4.6 SUMMARY

Multiple qualitative methods of investigation combined with qualitative surveys yielded information that confirmed the existence of Mode 2 knowledge in higher education. While qualitative methods yielded rich descriptions of the programme in the case study, the quantitative methods provided more focused and standardised responses.

As a staff member of the Technikon, selecting it as the primary site had more practical benefits than not and it was rather fortuitous that it represented an interesting and illuminating site for the nature of the investigation. Equally convenient was having a 'captive assignment' in the form of programme groups with which I had had some dealings.

Descriptions of the learning programme by the participants revealed both their diversity and commonality. They also shed light on the variety of insights and perceptions of the participants who shared views of knowledge production as defined in the typical technikon language of 'co-operative education'. However, in practice more complex conceptions were demonstrated. The understanding of Mode 2 knowledge as a typology of knowledge production ranged from 'narrow technical' conceptions to broader constructivist ones.

This was objectively determined by the suitability of the Child and Youth Care Programme and subjectively by my 'more intimate' prior knowledge and understanding of the programme and its dynamics. The programme became the object and subject of the investigation. It was also very convenient that the programme group had kept a chain of written records of the development and design of the programme and had an accessible website. Of equal importance was the fact that the programme was both standard and deviant from technikon-type, co-operative education programmes; and my professional 'instinct' that it represented an approximation of Mode 2 knowledge as well as a response to the new higher education policy imperatives. This 'instinct' was confirmed in the analysis of both the qualitative and quantitative data. I tried to capture the 'letter and spirit' of government policy documents published between 1994 and 2001 and the debates and discourse spawned by them. Institutional policy documents shed light on the relationships between those policies and the policies and practices of the programme staff. The following programme documents represented much needed data for analysis purposes: learning materials, tuition schedules, staff directories, minutes of meetings, workshop reports and reports of discussions with employers. But in order to 'test the hypothesis' that specific Mode 2 type knowledge programmes did exist in higher education required more than document analysis. Through an analysis of the collected transcripts and field-notes it was possible to record rich descriptions and 'patterns' that could highlight how closely it approximated Mode 2 knowledge. It was obvious that the viewpoints and opinions of participants had more commonality than they had differences: the programme's relationship with other disciplines, the group's views on partnerships and collaboration, community development and other issues.

At three workshops of a series of seven Programme Group and Faculty workshops between April 2001 and February 2003 surveys were conducted with the aim to collect focused and standardised responses to key knowledge production concepts. The workshops were also used to collect information as participant observer in field-notes.

Finally, my multiple roles as researcher, colleague and friend presented difficulty as well as ease in obtaining information and I dealt with situations as demanded by the purpose of the study and banking on my prior skills and experience as an oral historian. While a single case study methodology had its own drawbacks, it remained the best method to obtain what I wanted, namely rich descriptions of the insights, viewpoints and perceptions of participants on issues of knowledge production.

CHAPTER 5

PRESENTATION AND DISCUSSION OF FINDINGS

5.1 INTRODUCTION

This chapter presents the intended and unintended results revealed by the case study. In the course of the presentation the primary questions are answered: does it approximate Mode 2-type knowledge? How is such approximation provided by the informants? How do informants see themselves in the process of knowledge production? And, in the context of the hegemony of Mode 1 knowledge mental maps and paradigms, can a Mode 2 culture of knowledge be established and or reinforced in higher education at this juncture in South Africa?

The immediate unit of analysis are the persons in the programme group who are distinguished from others outside the group but who have an interest in knowledge production, such as policy makers, peers and other stakeholders. The chapter emphasises the what (descriptions) and the how (how I get to the what) and also attempts to probe why questions in order to establish a relationship between, on the one hand, the case study and Mode 2 knowledge thesis; and between the case study and the knowledge production policy imperatives in the country after 1994.

Details of the case study were captured through quantitative and qualitative methods. These referred to the key issues that had a bearing on the production of knowledge by the participants; the commonalities and discrepancies revealed; and the features of the programme as matched against the attributes of Mode 2 knowledge as provided in chapter three.

5.2 PRESENTATION OF SURVEY FINDINGS

Four workshops provided opportunities for the collection of quantitative information as well as for participant observation. The four survey questions were administered at three workshops between October 2001 and November 2002 and together with participant observation represented reliable and unobtrusive methods that yielded results that confirmed patterns as well as discrepancies.

5.2.1 Survey question one

The survey on the *Prioritisation of Policy Goals* was based on a synthesis of the draft goals as listed in the National Plan for Higher Education which was gazetted in 2002. A list of ten policy goals was presented to informants accompanied by one survey question: 'Place the following goals of the new HE system in order of your priority, 1 to indicate the most important and 10 to indicate the least important'.

Response rates:

Table 5.1 Responses to Survey Question One

Responses	
No. surveys distributed	22
No. surveys completed	19
Total responses	19
% of responses	86.3

N=22

Item	Ranking	No Informants
Promote academic freedom	10	14
Promote values of non-racism, non-sexism and democracy	9	11
Respond social, cultural and political development	8	11
Promote public accountability	7	10
Promote access and equity	6	13
Promote diversity	5	17
Redress of past inequalities	4	12
Respond to social and economic development	3	19
Widen knowledge base of graduates	2	12

Prepare graduates for the workplace 1 19

N=19

Policy Goals by ranking

1. Prepare graduates for the workplace.
2. Widen knowledge base of graduates.
3. Respond to social and economic development.
4. Redress of past inequalities.
5. Promote diversity.
6. Promote access and equity.
7. Promote public accountability.
8. Respond to social, cultural and political development.
9. Promote values of non-racism, non-sexism and democracy.
10. Promote academic freedom.

No clear descriptions of the policy goals were provided or obtained and the responses were listed in terms of actual majority numbers; where respondents indicated an item differently from the majority their responses were not counted. Without a benchmark it was difficult to make definitive conclusions but the prioritisation of policy goals in this exercise was consistent with views expressed in the qualitative data. A weakness lay in the question. Ranking them individually would have provided more useful result, in this case ranking all items, forced informants to choose.

5.2.2 Survey question two

For the survey on *Compelling Mode 2 Knowledge issues* I relied on the Prospectus of the Center for Transdisciplinary Research in the United States of America An extract from

the prospectus of the centre that described a Mode 2 knowledge oriented programme, was distributed in hardcopy to all twenty-two staff a week before the workshop. At the workshop copies were again distributed and this time they were accompanied by one survey question: 'Please highlight three compelling issues in the description of the qualification'.

Table 5.2 Responses to Survey Question Two

No surveys distributed	22
No surveys completed	19
Total responses	19
% of responses	86.3

N=22

ISSUE	INFORMANTS	PATTERN
Industry needs	19	1) Industry need
Economic needs	3	2) Going beyond disciplines Team-work
Equity	5	3) Need for Problem-solving Need for application of learning
Going beyond disciplines	11	
Need for problem-solving	9	
Need for application of learning	9	
Globalisation	3	
Team-work	11	
Partnerships	8	

N=19

5.2.3 Survey question three

Categories for the survey question on '*Differences between university and technikon programmes*' and drafted jointly with programme staff, were derived from Gibbons, 1994; Centre for Development Enterprises and programme documents. Significantly many of these categories were subsequently verified by other experts (for example Ntshoe 2003; Muller & Cloete, 2004). At a faculty workshop with the theme 'The relevance of technikon programmes', the survey instrument was distributed. It consisted of a list of thirty-four characteristics of learning programmes, accompanied by a survey question: 'Please make *one* tick (U or T) to each of the characteristics as either 'university or technikon'. Each one of these characteristics was allocated to either a university OR a technikon programme. Since the workshop included participants from outside the programme group and the institution, a specific request was made to programme staff to identify themselves by means of an agreed code (C&Y).

Fifteen coded feedback responses were among the general workshop feedback forms. I decided to base my analysis on a selection of responses from all the forms received. Seventy-one were completed.

The perceptions of the informants of the importance of each category associated with university and technikon programmes are shown. Each item was ranked by a possible number of twenty-two participants to belong either to university or technikon. Those items ranked by fifteen and more participants were considered to belong to the top categories of that institution. Fewer than fifteen for an item was taken to mean that it was not clear-cut and could be associated with both institutions.

Table 5.3 Responses to Survey Question Three

Responses	
No surveys distributed	100
No surveys selected	71
No surveys incomplete	29

Total responses 71
 % of responses 71%
 N=100

Item	University (U)	Technikon (T)
1. Abstract thinking	20	0
2. Real problem-solving	5	15
3. Simulated problem-solving	15	5
4. Innovative thinking	11	9
5. Content-driven	14	6
6. Outcomes-based	5	15
7. Trans-disciplinary	6	14
8. Inter-disciplinary	6	14
9. Multi-disciplinary	11	9
10. Single-disciplinary	20	0
11. Unit standard design	0	20
12. Modular design	5	15
13. Thematic design	10	10
14. Faculty-based	20	0
15. Programme -based	0	20
16. Collaboration-based	0	20
17. Multi-perspectival	20	0
18. Peer review based	20	0
19. Stakeholder review based	0	20
20. Need formatted structures	12	8
21. Need informal structures	0	20
22. Need flexible planning	0	20

23. Cognitive knowledge	20	0
24. Need transient teams	3	17
25. Elitist	20	0
26. Transferable skills	4	16
27. Fragmented knowledge	13	7
28. Academic skills	20	0
29. Territorialism	17	3
30. Application-based	0	20
31. Institution-based	20	0
32. Responsive to industry	0	20
33. Specialist disciplines	15	5
34. Generic competence	15	5

N=20

Table 5.4 Summary of top (twelve) responses (score of 15 +)

University	Technikon
Abstract thinking	Real problem solving
Simulated problem-solving	Outcomes-based
Single disciplines	Unit standard-based
Faculty based	Modular
Multi-perspectival	Programme-based
Peer review	Collaboration
Cognitive knowledge	Stakeholder review
Elitist	Informal structures
Academic skills	Flexible planning
Institution-based	Transferable skills
Specialist disciplines	Application based
Generic competence	Responsive to industry

5.2.4 Survey question four

Categories for the survey question on *'Importance of competencies'* were taken from works by Michael Gibbons (1994, 2000) and from the programme literature. Additional

categories were derived from a survey conducted by the Centre for Development Enterprises (1999) although the contexts and purposes of this survey were different.

A survey document randomly listing twenty competencies for B. Tech. graduates was distributed to twenty-two staff members, accompanied by the request to: 'Please rate **each** competency for your B. Tech. graduates, in order of importance with 1 indicating unimportant and 5 indicating very important'.

In addition, definitions were provided for each of the twenty competencies listed. The ratings were based on responses to a 5-point Likert scale, 1 indicating the competency was unimportant and 5 indicating that the competency was very important. The mid-point of 3 indicated that it was somewhat important.

The perceptions of the informants concerning the importance of each competency required of their graduates are shown below. As data are at ordinal level (converted into percentages) only estimated means could be ranked. The table shows that the means of competencies ranges between 0.9 and 6.0. Following on the CDE survey (1999) the study takes a mean of less than four to denote that informants interpreted the competencies to be unimportant.

Table 5.5 Responses to Survey Question 4

Responses	
No. surveys distributed	22
No. surveys completed	15
No. surveys incomplete	7
Total responses	15
% of responses	68.8
<i>N=22</i>	

	Percentage			Mean rating	Rank
	Very important	Important	Of little importance		
1. Ability to solve problems	62	33	5	6.0	1
2. Oral communication	36	47	17	3.5	10
3. Written communication	50	21	29	4.5	6
4. Ability to work in teams	58	35	6	5.5	3
5. Basic research skills	35	44	20	3.5	10
6. Basic mathematical skills	37	41	22	3.6	9
7. Basic computer skills	41	39	20	4.0	7
8. Ability to work individually	58	35	6	5.5	3
9. Ability to transfer knowledge	20	34	46	2.0	14
10. Self-assessment	20	53	27	2.0	14
11. Leadership	22	43	35	2.1	13
	60	30	10	5.7	2
12. Enthusiasm	58	35	6	5.5	3
13. Time management	62	38	0	6.0	1
14. Learning skills	52	28	20	5.0	5
15. Work skills	30	30	40	2.5	11
16. Self-confidence	10	12	78	0.9	15
17. Political Awareness					
18. Critical Thinking	40	40	60	3.8	8
19. Developing Others	26	32	42	2.4	12

20. Results oriented (n=19)	54	32	14	5.1	4
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Table 5.6 Competencies ranked in order of importance

Solving problems

- Identify problems
- Describing problems
- Find alternative solutions
- Applying solutions

Learning Skills

- Analysing tasks
- Reading
- Listening
- Writing skills
- Numeracy

Enthusiasm

- A positive 'can-do' attitude
- High energy levels
- Being pro-active
- Strongly driven

Teamwork

- Facilitation
- Conflict resolution
- Motivating others
- Understand different roles

Work individually

- Appreciate isolation
- Self-assessment
- Self-motivating
- Managing time

Results-oriented

- Oriented-focus on task at hand

Setting milestones and goals
Planning and organisational skills
Innovative
Competitive

Time management

Organises and completes tasks effectively and efficiently
Punctuality

5.3 PRESENTATION OF KEY THEMES

The study investigated the existence of Mode 2 knowledge programmes and knowledge production in higher education and accessed the viewpoints of participants in a programme group at a former technikon, through quantitative (surveys) and qualitative (interviews, participant observation and document analysis) instruments. It attempted to illuminate the convergence and divergence of participants' responses to the tenets of the Gibbons thesis and the imperatives of the new policy framework for the higher education sector. A comprehensive literature study included an examination of the Gibbons thesis, the new higher education policy documents and the discourses that ensued in the sector. The empirical study included a series of four surveys, three informal interviews and participant observation at four workshops. The study generated a wide array of responses. The initial impression was that by and large, the programme approximated the Gibbons thesis. In the course of analysis of the data, it became evident that participants shared a common understanding of knowledge production that underpinned their responses. These could be clarified round the key themes of paradigm shift; pedagogy; curriculum; research; partnerships; community development; and integration of education and training.

5.3.1 Paradigm-shift

Viewed from inside the life of the programme, a definite shift in knowledge production had taken place and the case study demonstrated the degree to which a paradigm shift had occurred and to what extent the imperatives of the new legislation and policies were being implemented. An important thread running through the information provided was the desire of informants to be distinguished more from the university sector by aligning themselves and their programme, consciously and unconsciously, with Mode 2 knowledge production and the imperatives of the new higher education policy. The shift in emphasis from university-led production of knowledge to more socially distributed (Gibbons et al, 1994) and community-oriented (Subotzky, G 1998) approaches were visible in the programme. This entailed a definite transition, epistemologically, from closed knowledge systems managed by canonical norms and collegial authority to more open systems that were dynamically interactive with external parties, interests and knowledge structures, as is expected in Mode 2 knowledge programmes.

The staff members involved in the programme had little difficulty in meeting the requirements of programmes that were in "a more technical paradigm, in which vocational/ human capital discourse is overlaid with radical and humanist discourses..." (Luckitt, 1998). Equally they had little compunction about being accountable to the quality assurance requirements of the DoE, a situation that is "... often perceived to be uncomfortable if not threatening" by the HE sector (ibid).

5.3.2 Curriculum

5.3.2.1 Pedagogy

Judged partially by the literature quoted in programme documents participants supported a curriculum that utilised (radical) constructivism. (Workshop paper, HOD, February, 2002; Writers' Workshop Report, February 2002). Radical constructivism assumes that in all knowledge there are no 'givens' or *a priori* consciousness, no objective empirical data or facts, nor inborn categories or cognitive structures (Mahoney, 2002). Two defining

principles buttress radical constructivism: knowledge is not passively received either through the senses or by way of communication, but is actively constructed by the subject; and the function of cognition is adaptive and serves the subject's organisation of the experiential world, not the discovery of an objective ontological reality (ibid.). Radical constructivism claims to have its roots in Kant's synthesis of rationalism and empiricism where the subject has no direct access to external reality, and can only develop knowledge by using fundamental in-built cognitive principles ("categories") to organise experience. By reflecting on their experiences, learners construct their own understanding of the world they live in, their own "rules" and "mental models," which make sense of their experiences.

Unlike the universities where the term curriculum does not have wide currency, the term is almost 'revered' in the technikon sector, including at the institution at which the case study was located. In an environment where definitions of curriculum are legion, the programme in the case study defined it unambiguously as "the organisation of knowledge and work-based learning that emphasises learning outcomes rather than knowledge" (TSA Prospectus, 2002) thus providing a path for the curriculum away from the "dominant canonical assumptions about the need for structured, linear, hierarchical learning with students having been socialized into the rules, rituals and objectives of disciplines" (Luckitt, 1998). Participants deviated from the latter traditional way in which the curriculum worked and where the general approach was to break down knowledge into atomistic units of what had to be taught, guidebooks were designed and written, assignments were given and grades determined, followed by the repetition of the whole cycle the following year. The negative results of this stratification were a proliferation of qualifications (Introduction, TSA Curriculum Guidelines, 2001) at the institution where the case study was located, with the same stated outcomes and content, competition rather than co-operation among academic staff and the protection of turf. From its inception the programme stamped its 'unique-ness' by not following the traditional higher education curricula.

It attempted consciously to embrace the letter and spirit of the NQF and adopted a new mental model, one that placed learners in all their diversity at the centre of the learning process. The outcomes to be achieved by learners were specified by both the demands of the disciplines/ subjects/ unit standards as well as by the industry. These were obtained through needs analyses. This meant that staff began the development of the curriculum with the end points, which were the outcomes, and then designed programmes that would achieve those outcomes (Proposal for Course Development, 2000). The assumptions that underpinned the design of the curriculum were unit-standard and outcomes-based learning materials, a varied methodology that would allow for self-paced individual study, group work and individual coaching, modular format and a balance between theory and practical activities (Ibid.).

The participants' use of learner-centred concepts such as experiential learning and learner empowerment (Ibid.) acknowledged the locality and situatedness of the learner in the community and in this way it gave expression to the demands of working and unemployed learners who had been neglected and systemically marginalised from higher education life. Its pedagogy stressed learner motivation and valued the attributes that were demanded and valued by external stakeholders. It also accepted a range of differences in contexts within the field of learning styles and experiments with a variety of flexible facilitation types, with workshop mode as the 'best practice'. For individual staff members the programme provided a 'Paulinian' learning curve in terms of the transformation in their attitudes and thinking on pedagogy and about the value of the uniqueness of black student experiences and what they could bring to the programme (Participant B, March, 2002) They were acutely aware that there were 'no experts' but rather a host of influences and parties, including students, involved in the production of knowledge.

5.3.2.2 Workplace and application-based

In acknowledgement of its mission of vocational or career-oriented qualifications and the imperatives of the new qualifications framework, the institution had developed re-

curriculum guidelines that stated that the need for learning programmes was to be made up of disciplinary knowledge *and* professional and work-based knowledge across the traditional boundaries (TSA Curriculum Guidelines, 2001). The guidelines applied to all programmes including the programme in the case study which did not formally inherit the legacy of knowledge production of a rigidly standardised and formalised curriculum (Participant B, March 2002). The institutional approach to workplace learning was summed up in the central concept of 'co-operative education' a term that can be traced back to John Dewey's 'co-operative learning'. The term is defined as a venture where people shared learning experiences in a co-operative venture such as the workplace and it is distinguished from the more conventional 'co-operative learning' in a classroom. A hallmark of co-operative education is an experiential education programme that provides opportunities for students to engage in experiential education, that is. integrating learning with work *experience* (CTP & Sasce, 2000). This included at least four necessary components: face-to-face interaction, goal interdependence, individual accountability and demonstration of interpersonal and group skills (Faculty of Applied Community Sciences Report, TSA, October 2002). The philosophy of co-operation "is founded on the basis that if the full capacity of individuals is to be realized an education that aligns the cognitive and affective domain of the brain is imperative. We need to dispel the assumption or perception that one is more important than the other" (Mseleku, 2002). Despite the possible diversity of interpretations of what co-operative education ought to be, there was consensus among participants that the stated aim of co-operative education programmes was to develop learners in the demonstration of workplace competencies and since most of the students in the programme were mature adults some prior and tacit competencies were assumed. In addition to the specific outcomes and competencies as prescribed and recorded on the SAQA database, the programme was based on the needs of the relevant industries, as established through a needs analyses, consultation and partnerships. Resonating with the requirements of the National Qualifications Framework, the programme sought to provide students with the knowledge, skills and attitudes that would provide not only a transformation experience, but also one that would enable them to compete in the workplace (Prospectus, 2002; Republic of South Africa, 1997; HSRC, 2003; CHE, 2000b, 2000c; CTP, 2000).

Participants remarked:

"We have to listen to what industry says. If they want certain skills to be taught, we have to teach it".

"Knowledge must be useful to communities in general"

"I teach what students need to know, not what someone somewhere wants".

The work placement programme involved placing students in selected workplaces under the supervision of an academic tutor from the institution and a mentor. The workplaces were typically community and non-governmental organisations. Lecturers were entitled to appoint 'facilitators' who augmented the supervision by the tutor and mentor. Students' learning was structured according to a constantly negotiable and re-negotiable learning plan (Programme Development Schedule, 2001). They attended the workplace for three months a year, divided into three trenches and kept detailed journals that recorded their work and learning experiences, their reflections and their responses. They also attended four, three-hour compulsory workshops at the institution which focused on practical experience and project work. The workshops were important for the sharing of experiences and problems and the telling of stories and anecdotes. Workshop topics addressed community needs, how to research these and evaluate them, how to address solutions and writing reports (Appendix B). Efforts were made to select facilitators who spoke the students' language (Advertisement, June, 2001).

Although competence was sometimes defined by some participants in narrow behavioural science, skills-based, 'can-do' terms that downplayed the achievement of students' broader intellectual qualities a detailed analysis showed that the programme did seek to provide 'thick-rich' definitions of competence as prescribed by government as for example in the White Paper (White Paper, 1997:18). This was demonstrated in the value placed on social competencies as contained in the 'generic competencies' for learning experiences that developed the emotional, social and ethical intelligence of its students. It also allowed spaces for self-motivation, managing stress, tolerance and sensitivity of

different viewpoints and approaches, self-respect and respect for others and adjusting to different environments as appendix B indicates.

5.3.2.3 Trans-disciplinary

The programme crossed the traditional organisational and subject boundaries of faculty and disciplines. It also crossed the boundaries of the institution and collaborated with other institutions and organisations in order to allow students access to different employment pathways found in the community, industry and other related fields of work. As counter to the more rigid subject-oriented courses, the programme emphasised the notion of 'learning programme' as recommended by the NCHE and developed in modular form (Proposal for Course Development, July, 2000). In South African parlance a programme is an offering that is provided at different sites using a variety of delivery modes and consisting of multiple credit units that can be accumulated over time. Such units have an academic and vocational dimension and are geared towards competencies and employability (White Paper, 1997: 18). 'Unintentionally' the proposition by the Department of Education to move from 'courses to credits, departments to programmes, from knowledge to competence' (Scott, 1995:75-79) was embraced and implemented by participants. Moving away from a disciplinary approach implies a movement away from faculties towards 'looser frameworks which set the rules and boundaries within which the new credits currency can operate' (Gibbons, 1994; Acott, 1995: 76).

Participants elaborated on this situation:

"I am trained in chemistry, but I teach in the faculty Public Management and Development. My expertise is used well in many parts of the course in research methodology as well".

"We borrow from a lot of disciplines- sociology, psychology, social work- you name it".

"No subject can give all the facts we need"

5.3.3.4 Heterogeneity

The conduct of research and teaching in the context of solving problems meant that the staff researchers could not remain within the confines of the 'programme group' or the technikon. It required new organisational arrangements, linking the technikon, industry, the government, non-governmental organisations and other partners. The heterogeneity of knowledge and of knowledge producers was demonstrated in the diverse conditions of those who solve problems through research and teaching. Participants took as a starting point the demands of industry and the intellectual frameworks of all those who participated in the search, with a framework eventually evolving that was able to constitute a new point of departure from which further problems might arise. Accountability was not limited to the programme or even the institution but to a host of stakeholders (TSA Curriculum Guidelines) in an 'open intellectual system' (Gibbons et al 1995: 167; Scott 1995: 177). A number of staff members often worked on a single paper and they worked in collaboration with researchers from external professions. The workshop position papers were the results of such ventures. Thus sensitivity to social accountability and reflexivity were built into the written agreements with external stakeholders.

Participants were acutely aware of the reality that their ideas were up for continuous contestation of what new knowledge should be included in the programme. In some of the modules of the programme Mode 1-type knowledge thinking prevailed more than in others. In the former modules, provisional consensus was established within the faculty or institution. This applied exclusively to those 'borrowed' from disciplines that preferred academic autonomy and independence. The more knowledge-type modules designed 'from scratch' were clearly done in response to specific demands by the industry and their format was more temporary. Furthermore, quality control in the programme was closely linked to the outputs in the workplace as defined by the industry and the specific workplace. For the measuring of outcomes a combination of quantitative and qualitative methods and tools were utilised involving learners, peers, academics, practitioners and employers.

A participant explained:

"We work with companies, peers at the Technikon and others...we develop the curriculum together. Students are consulted"

5.3.4 Role of research

Producing knowledge through research formed an integral part of the duties and job-descriptions of staff. A look at the research produced in the Faculty as a whole, showed the dominance of an academic agenda. Research was executed inside the faculty and focused on analysis and on what was called 'fundamental knowledge' (Faculty Report, October 2002) as opposed to applied knowledge. Research products were primarily shared with fellow researchers within the faculty with dissemination occurring downstream and at conferences with peers. Description-driven research that was problem-focused rather than solution-focused dominated. In Kuhn's language such research was 'normal science' and was subject to the classical trinity of description, explanation and prediction.

The research agenda is a contested field; some feel that writing papers, going to conferences especially overseas is (sic) more important. Others feel that we must look at issues and problems in the country and work with the people where they can solve and address them. What purpose does (sic) conferences serve? They're a nice to have...but they don't help the people we serve.

Academics sometimes live in another world. One staff member in the faculty (but not in the programme group) goes to international conferences most of the year. For what? Another colleague published four papers last year but his students, most of them dropped out or failed.

Descriptions of the research projects provided by participants in the programme group were categorised as descriptive research that had internal reference (Participant A, February 2002; Faculty Report, October 2002) and which had external relevance. The former were typical Mode 1 knowledge production projects undertaken in collaboration with internal peers and colleagues and had limited external relevance. The products were valid and relevant as far as they contributed to academic understanding and debates in the field. The programme self-consciously deviated from the faculty agenda by including solution-seeking research that was made at the request of external parties. The new policy environment provided further impetus to this kind of research that is dominated by the external relevance of research products. Seminal documents of the programme group included a broad survey conducted in 2000, of the literature on community work field placements programmes in Australia, the United Kingdom and the United States of America. It was noted that the literature "explicitly acknowledges that professional practice occurs within different organisational contexts and that these contexts are diverse in terms of purpose, structure, goals, culture and rules" (Faculty Report, October, 2000). The works of Spencer, A McDonald C and O'Connor (1994) and Wilson and Setterlund were cited, presumably after a study stint in Australia by some staff members. Similarly, a journal 'Australian Social Work' was quoted regularly. "Technikon researchers must be able to contribute to context-based multi-disciplinary research that is relevant to both teaching and research" (TSA Document, 2001: 13).

Sponsored by the programme budget, case study research was conducted in 2000 when data were collected on post third-year students at the Technikon who had been placed in a number of different urban and rural human service settings (Participants A & B 2002). The researchers identified what types of learning experiences students deemed significant and from that drew conclusions about students' professional competence. It also led to a re-assessment of the profile of the facilitators: what criteria should be used in the appointment of a facilitator? Who is the best person to help achieve the learning objectives of a particular student? What impact will a specific placement have on team-work and organisation? What resources are needed to physically accommodate a student? What stakeholders should be involved in the negotiation of placements? (Workshop

Paper, February 2002). An important source of evidence in the thinking of informants lay in the link between research and teaching. In order to remain 'sustainably relevant' participants addressed their knowledge mission towards basic, applied and collaborative research and toward the development of undergraduate degrees, professional training, lifelong learning, community and other service rendering.

5.3.5 Partnerships

In general terms, the concept and practice of partnerships was crucial in the development of new programmes and in the re-curriculation of existing ones at the institution. Interestingly the institutional climate was characterised by more collaboration with external partners and knowledge producers, through advisory committees, than with internal ones. The genesis of the programme, originally titled, Child and Youth Care, lay in 1998 when Kairos Foundation, an NGO in the field of social welfare in the Netherlands, mediated a project on behalf of the South African Inter-ministerial Committee for Transformation of the Child and Youth care system. The partners in the project were Technikon SA., the Hogeschool of Amsterdam and the Dutch Department of Welfare. At the beginning, programmes were exchanged between Technikon SAs' Faculty (Division) Applied Community Sciences and the Hogeschool of Amsterdam. Areas of commonality and differences were identified. A foundation programme was developed jointly with five youth organisations in Gauteng and non-government organisations under the umbrella of the National Council for Child and Family Care; and funded by the Kairos Foundation. The main criterion used in the selection of students from those organisations was that they had to be "extremely disadvantaged" (Participants A & B, 2002.) in the sense that they had never had formal, paid work, lived in poverty and had no prospects of ever procuring employment through the normal route- until this intervention (Ibid.). The involvement of major national stakeholders was the result of recognising that relevant knowledge existed outside the border of the institution, that funding was needed from outside and that students needed 'experiential placements' (Ibid.). Through continuous collaboration and consultation the titles, outcomes and content of the modules of the programme were determined jointly. While the internal

teamwork centred round the division of labour for the research, teaching, assessment and support domains, the external partners from the industry of child and youth development determined the work-outputs. The latter, in typical outcomes-based mode of curriculum development, provided the starting points for the design and development of the curriculum (Proposal for Course Development, July 2000). The fact that the external partner was not 'profit-driven' allowed the programme group more scope in the management and selection of content. For the programme group, the essential rationale and *raison d'etre* of the networks, partnerships and collaborative agreements were three-fold: the need for the acquisition of specialised knowledge of all kinds; the external validation of programmes; and the sharing of costs.

5.3.6 Community development

The idea of community service and outreach in education is not new but did become more intensified by the emergence of new forms of knowledge production and the "systematic integration of community service into the formal curriculum". (Subotzky 2000:113). The days when community service was considered as an 'add on' to learning or as 'alternative projects' to the formal curriculum are in the past. It is worth noting the calls made by the national and state governments in a developed country such as the US, for the strengthening of connections between public schools and their communities, inviting people outside of the school system to play active roles in decision-making processes (Cryss-Brunner, 1998).

The programme was driven by community concerns for access of marginalised youth into higher education and to teach them skills that were needed in solving community problems. Such an approach was in line with the 'community service partnership model' (Subotzky 2000:112) which is distinguished by four traits: community service in pursuit of social equity; the integration of experiential learning in programmes; the production of socially-driven and applications-driven knowledge and collaborative forms of decision-making (Ibid.). In this way the participants asserted roles for themselves that 'illustrate

the valuable role of higher education in the important processes that underlie our society and culture and in meeting the needs of society more closely' (ERIC 1996b: 1-3).

5.3.7 Integration of education and training.

The higher education system of 21 universities and 15 technikons in South Africa has, in accordance with the 'size and shape' plan of the new government been re-arranged into three types of institutions: traditional universities, universities of technology and comprehensive universities (see chapter three). All, but three of the former technikons have been merged with other technikons or universities to constitute universities of technology. For instance, TSA was merged with Unisa based on their joint missions as distance education institutions.

With regard to the production of knowledge, the system continues to be characterised by a contradiction: according to the policies a unified system must be established but in practice the binary system of technikons and universities remains.

Table 5.7

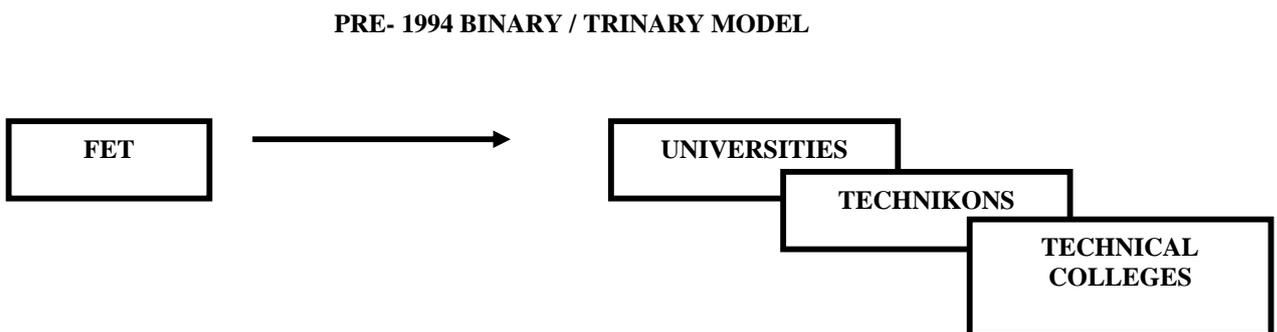
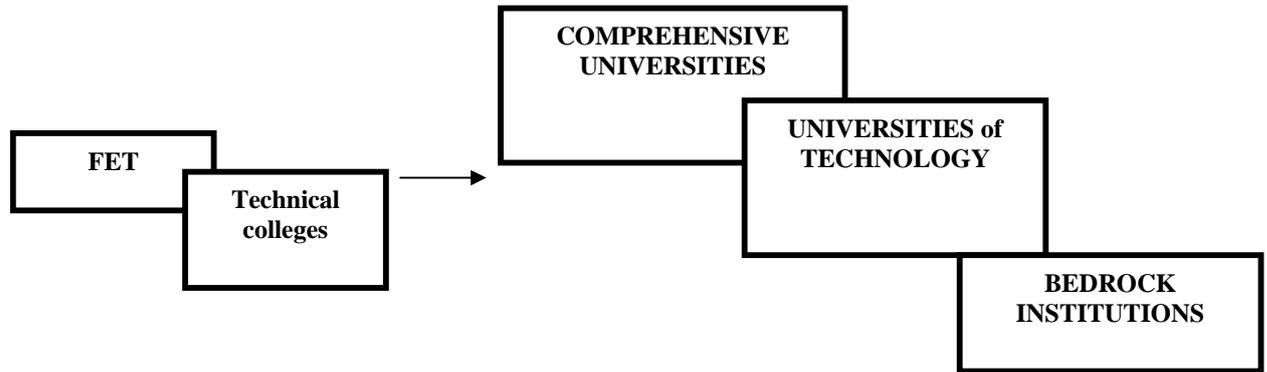


Table 5.8

POST- 1994 UNITARY / TRINARY MODEL



The programme in the study is one of many new programmes that have entered the higher education sector to resolve the knowledge production contradictions by allowing itself to be guided by the new National Qualifications Framework Act. Moreover, in the context of declining financial support from the Ministry of Education, the programme had come to rely upon either other governmental departments or on non-governmental actors such as the corporate sector for the funding of its projects. Their approach to the integration of education and training dovetails neatly with that of the Department of Labour. In order to enhance the skills of workers in the country and to strengthen the integration of education and training, the Department of Labour has legislated for the establishment of learnerships. Towards this end it has imposed a training levy on employers in the twenty-seven economic sectors of the country (Skills Development Act, 1998). The National Skills Act compels organisations to submit workplace skills plans to the relevant sector education and training authority (SETA) (ibid.). The Skills Development Act (1998) and the Skills Development Levies Act (1999) respectively, oblige employer organisations to set aside one percent of their annual payroll for the training and development of their workers through either learnerships or other skills

programmes with the aim to harness workers as competitive resources for the global economy (Mseleku, 2002). Despite the non-participation of the higher education sector, the learnership mode of learning has become important in the access and distribution of skills and transcending the apprenticeship system. It is a pattern that seems set to continue in the future as the tables below indicate.

Table 5.9 Decline in Apprenticeship training

Type of Training	1986	1988	1990	1992	1994	1996	1998
Apprenticeship	298 26	234 16	244 48	257 85	22 015	18 546	16 577

Source: Kraak, et al. 2000.

Table 5.10 Increase in Learnership training- Agreements registered

2002/03	2003/04
25 341	69 306

Source: Department of Labour NSDS Implementation Report 1 April 2003-31 March 2004

Table 5.11 Number of Learnership Agreements registered per level (NQF levels 1-8)

Total	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8
62 115	3 765	12 125	5 702	19 414	4 700	2 548	13 826	0

Source: Department of Labour NSDS Implementation Report 1 April 2003-31 March 2004

Table 5.12 Apprenticeships and enterprise training

Type Of Training	1986	1988	1990	1992	1996	1998	1999
Apprentice-Ships	29 826	23 416	24 448	25 785	22 015	18 546	16 577
Enterprise Training	288 633	318 025	320 070	283 664	58 004	110 278	61 145

Sources: Kraak et al, 2001; ETDP Annual Report, 2004/2005

5.4 SYNTHESIS OF SURVEYS AND THEMES

5.4.1 Interpretation of policy demands

Although policy issues loomed large in the consciousness of participants many were not confronted directly until the survey conducted in the study was undertaken (Participant C, December, 2001). Since no descriptions of the new draft policy goals of the new policy framework for higher education were provided in the survey instrument, the prioritisation of the draft goals was done strictly according to the interpretations of participants. The resultant responses raised commonalities as well as discrepancies. While the preparation of graduates for the workplace was considered the most important priority as it was in accordance with the technikon experience of participants, it was confusing why participants chose 'the widening of the knowledge base of graduates' as the second most important in light of the central thread among informants of 'knowledge versus competence', except if understood against the importance attached to examinations at the time (November). The need for social and economic development was placed as the third most important priority which was inconsistent with views expressed elsewhere that it was not important. I also expected redress and the promotion of diversity, non-racism, non-sexism and democracy to be rated higher in view of the highly publicised and numerous 'diversity training programmes' organised by the institution at the time. The promotion of public accountability was low given the prominence for partnerships; unless

private industry was not considered in the interest of the public. Academic freedom was expectedly bottom of the list and concurrent with the culture of 'obedience to prescriptions' at the Technikon. Other responses to policy issues were expressed in multiple and even polemical ways.

Some participants stressed a pragmatic view:

"We are already implementing it".

"We understand these goals as they are our goals".

"This (sic) is nothing new"

Others expressed individual belief systems:

"We teach to prepare students for work". "I look at industry not the government".

Other participants revealed another understanding of the policy issues:

"To be honest, I am not happy with these new policies. They are no different from the old government".

Still other participants expressed these interpretations of the policy:

"We now see reverse discrimination against whites...."

"Democracy means for everyone".

"Democracy means for those who did not have it before...for blacks".

5.4.2 Compelling Mode 2 knowledge issues

The identification of Mode knowledge 2 issues confirmed and reinforced the results obtained in the first survey and also raised other important themes. It was obvious that industry needs remained the most compelling issues, followed by teamwork and trans-disciplinarity. Only half the informants elected problem-solving and application-based learning as compelling issues. It was interesting that they separated industry needs from economic needs which might well be tied to their deliberate disassociation of teaching, learning and research, with 'macro-politics'. Their micro-approach to their work focused attention strictly on immediate short-term goals as opposed to the more long-term and rather abstract goals of economic development. It tallied with the low priority for other

broad, macro-issues such as globalisation and the abstract, theoretical and intangible issue of equity.

The following differences were unambiguously singled out by all participants to be peculiar to universities: abstract thinking, single disciplinary, faculty-based, multi-perspectival, peer-review-based, cognitive knowledge, elitist, academic orientation and institution-based. Their choices might be based on their own perceptions and possible lack of insight, into university programmes. The use of biased words such as 'elitist' might also be seen as negative which might have influenced participants to associate it with any other institutions but their own. *

The characteristics identified with technikon programmes were: real problem solving, outcomes-based, unit standard-based, modular, programme-based, collaboration, informal structures, flexible planning, transferable skills and application based.

Traits that were associated strongly with both university and technikon were problem-solving (real and simulated), innovative thinking, thematic design and rather confusingly, multi-disciplinarity. The latter might have been the result of misunderstanding around the concepts. Good descriptions of the terms as for example, provided by Ntshoe (2003) were unavailable at the time (see 3.8.2.5 above).

* Significantly two terms that may conjure up negative connotations, namely 'elitist' and 'territorialist', are used fairly and legitimately in the literature (see for example, Barrat, 1997 and Subotzky, 1998 on elitism and Ntshoe, 2003 on territorialism).

Participants expressed their views on the non-disciplinary nature of technikon programmes in a variety of ways, for example:

"Technikon programmes prepare learners for the workplace. They help them to plan a career".

"There is nothing abstract about learning at the Technikon. We work with employers to make sure that what learners learn is what employers want".

"We are different from universities. We teach for the workplace. Universities teach for everything".

5.4.3 Perception of competencies

The perceptions of the informants of the importance of each competency required of their graduates were consistent with other views expressed but they also revealed contradictions. In terms of the description of 'graduate-ness' the importance ranking of competencies provided some insights into the thinking of staff. The importance attached to ability to solve problems (1), learning skills (1), enthusiasm (2), ability to work individually (3), time management (3), ability to work in teams (3), results oriented (4), and work- skilled-ness (5) signalled that the definition and perception of 'graduate-ness' was in line with what informants perceive to be 'workplace education'. Further, it could be extrapolated that informants contemplated graduates to be a mix of worker and learner with ability to work individually and to work in a team. Contrary to received wisdom and of information supplied elsewhere, the acquisition of typical work-skills does not top the list of competencies – for example problem-solving and teamwork. The contradiction between the ability to work in teams (3) and the ability to develop others (12) could be explained by the often rhetorical claim for teamwork versus the strength exerted by individual members within a team; and the priority attached to individual examination preparation and performance (1, 3, 3), the result of which was uppermost in the minds of informants at the time (November 2002). Unexpectedly, oral communication (10), basic research skills (10), mathematical skills (9), computer skills (7) and critical thinking (8) were not considered very important. It was interesting that enthusiasm of graduates was placed at number two and might again be related to an emphasis on examinations or to

the need of staff to have their teaching validated. It came as no surprise that competencies such as leadership and political awareness were considered least important.

5.4.4 Enrichment of concept of 'co-operative education'

Although generally unfamiliar with the Gibbons thesis, the qualitative information provided by participants demonstrated to what extent the imperatives of both the Gibbons thesis and the new legislation and policies were being implemented. While rhetorical commitment to the 'technikon culture' (CTP & SASCE June 2000: 6)) was reflected in the documents, a new model of the idea of 'other forms of knowledge production' was emerging. 'We listen to the industry' was a constant refrain. An important difference was the attempts by participants to negate the commodification and truncation of knowledge by extending their conception to include many types of knowledge: economic, social, cultural, moral and technological. While the transient and impermanent way in which modules were designed made commercialised viability necessary, the highly contextualised learning made it impossible to reduce the programme in commercial terms only.

Admittedly there was ambiguity and equivocation in some of the values espoused by participants even though definitive trends were revealed. One of these was their concept of knowledge as wider than 'commodification' and their emphasis on narrow demand-led competencies as part of their definition of graduate-ness. By placing the needs of industry as the paramount priority there was always the potential risk of staff accepting the assumptions of the employer about what made a good worker at face value. In some modules the programme placed less emphasis on workplace competence than knowledge. For example in survey four, 'widening of knowledge base' was placed as the second most important competency which tallied with the volume of generic competencies cum outcomes. Generic competencies such as life competencies; leadership competencies; teamwork competencies; citizenship competencies, including respect for other cultural traditions, languages and values (see Appendix B) demonstrated a non-behavioural definition of competence. Such a definition values the broader intellectual qualities,

knowledge and understanding of students and it is more in tune with Mode 2 knowledge than with the narrow definition of 'co-operative education' espoused by some participants.

Student Y wanted his experience as a policeman to be recognised towards the bachelor's degree. He based this on the fact that as a community policeman he did work to uplift communities through crime prevention, arrests, charges and prosecution. Comparing the outcomes stated for the degree in Child and Youth Care I found that although there were positive comparisons to be made, they could not be conflated with the outcomes of the qualification already obtained by student Y. In fact the qualification was obtained in 1973 long before the NQF became a legal framework. Some colleagues disagreed with my conclusions and claimed that there was a positive correlation between what student Y was doing in his job and what (sic) the requirements of the degree in Child and Youth Care. I had no way of confirming this without much work in translating the work of student Y into outcomes, using the NQF. Student Y was informed that he had to register for the whole degree in Child and Youth Care.

Student X had an excellent tutor who set the student the task of conducting a needs analysis for unemployed youth in a certain community. The tutor, who has already completed post-graduate studies in human resource development, had taken and applied a theoretical framework of intervention founded upon organisational principles rather than community development principles and introduced it into the programme group. The tutor who had requested the evaluation of the needs analysis indicated that money had been raised by a government department who would be interested in the student's findings and that a possible employment opportunity existed for the student on completion of his studies.

The tutor then discovered that the programme group could not see the relevance of the innovation and were refusing to work with it. Caught between the dilemma of meeting the expectations of the tutor and maintaining a constructive relationship with the programme staff the student turned to the head of department for help. My task was to help him see beyond his own personal investment in the situation (the opportunity for

employment) and consider his professional responsibilities as student who must pass an examination.

5.5 Summary

The chapter presented the details of the case study: the survey findings; the key issues that have a bearing on the production of knowledge by the participants; the commonalities and discrepancies uncovered and the features of the programme as matched against the attributes of Mode 2 knowledge as provided in chapter three. The findings demonstrated that the programme under investigation did approximate Mode 2-type knowledge and so strengthened the establishment of Mode 2 knowledge in higher education at this juncture in South Africa. In this way they further enriched the technikon concept of 'co-operative education'. In a very general way technikon qualifications are characterised as having been transformed from an over-emphasis on applied science to what can be typified Mode 2 knowledge at undergraduate degree level.

In their roles as researchers, participants, mandated by external stakeholders, consciously deviated from the faculty agenda by undertaking solution-seeking research that had external relevance. Partnerships and community development projects ensured that such research became a regular feature of the work of participants and it was given further impetus by the new national policy directions.

Paradigmatically the programme demonstrated a definite transition from traditional higher education (Mode 1 knowledge) programmes by operating interactively with external parties, interests and knowledge structures, as is expected in Mode 2 knowledge programmes. By having its technical, vocational, career-oriented paradigm infused with constructivist discourses brought them more in tune with the Gibbons thesis than with the traditional university and technikon discourses. For participants the stated aim of the 'co-operative education' policy of the institution was to develop learners in the demonstration

of workplace competencies but defined in a 'thick-rich' way. Their programme differed from many other programmes within the institution for whom workplace learning was 'an appendage' (NPHE, 2001). Such an approach necessitated a looser, heterogeneous and trans-disciplinary framework which in turn required new institutional and organisational arrangements and new forms of social accountability. Its Mode 2 pedagogy gave expression to the demands of working students and of external stakeholders and by defining their curriculum as "the organization of knowledge and work-based learning that emphasize learning outcomes rather than knowledge" participants gave expression to the imperatives of the outcomes-based model of the department of education as well as the model of learnerships of the department of labour. In this way they contributed towards the integration of education and training.

CHAPTER SIX

SYNTHESIS OF FINDINGS, DISCUSSION AND RECOMMENDATIONS

6.1 INTRODUCTION

In view of the contradictions in the processes of globalisation, the socio-economic conditions in South African and the organisation and ethos in higher education, this study investigated the question of how an alternative Mode 2 knowledge production was realised in the higher education sector in the current context of higher education transformation.

This chapter provided an overview of the most important global and national conditions in South Africa that gave rise to the production of Mode 2 knowledge. It begins with reference to the results of a literature study of the theories of knowledge, the need for theory-building and the relevance of the theory of 'critical post-modernism in late capitalism' to explain South African higher education, policy and transformation. It

indicates how this study has shaped the theoretical underpinning of change in higher education policy, the debates that have been spawned and the existence of empirical responses.

The Gibbons thesis and its usefulness in explaining higher education change in a period of late capitalism is reviewed along with its' relationship to the empirical investigation. The chapter outlines the extent to which Mode 2 knowledge production is demonstrated in a selected programme from a former technikon in South Africa, using a case study that reveals key assumptions and perceptions about Mode 2 knowledge held by lecturing staff and embedded in the structure, design and content of the programme. Based on the findings and in concert with the aims of the study, recommendations for practice are made.

6.2 OVERVIEW OF FINDINGS

6.2.1 Literature survey

The process of knowledge production demands theory-building in order to understand the past environment as it impacts on the present and future. The point of departure in the study is that a system of ideas with its attendant conceptual tools is required in order to explain social phenomena. The major theories are inadequate to explain the dynamics of the period of late capitalism. This situation that gives rise to the re-examination of old ideas, combined and re-configured into a plausible theoretical framework within which South Africa's response to knowledge production and generation in the new millennium of globalisation can be explained. The theory of 'critical post-modernism in late capitalism' (cf. 2.6.1 to 2.6.4) together with a 'culturally contextualized critical late post-modernism' as proposed by Tierney and Subotzky (cf. 2.7) provides pointers of looking at or 'reading' the world and society and education and has the propensity to guide the actions of higher education institutions at this juncture in the history of South Africa. 'Critical post-modernism in late capitalism' fills the gaps' in the theories of neo-Marxism, post-industrialism, academic capitalism and post-modernism by straddling, in the words

of Jameson, 'the essential economic and cultural elements in these theories'. The four paradoxes of post-modernism are unsolvable at the level of post-modernist theory because it *is* the 'cultural logic of capitalism' (late capitalism/ multi-nationalism). Jameson shows how time and space, subject and object, nature and human nature and the idea of progress and degeneration are all tied up with late capitalism. The resolution of these contradictions happen (a) through the dialectics of political, social, economic and cultural struggle, (b) through standardised, uniform social realities as a result of the integration of the world (developed and developing) through globalisation, (c) the negation of complacency and active political struggle, and (d) the fundamental need to retain a Utopian alternative to the global capitalist system. Put another way, to keep alive the ideal of a society that is qualitatively different from the present (cf. 2.6.3 to 2.6.4).

The 'critical late-modernist' framework of Tierney and Subotzky's draws similar conclusions as Jameson concerning the need for the a cultural perspective in higher education that addresses the inherent oppressive unequal nature of social reality and proceeds from assumptions that are framed within 'local social realities' (cf. 2.7). The views of Tierney and Subotzky combine concern for identifying and addressing basic inequalities with an understanding that key constructs such as knowledge and knowledge production are contingent on ideological and political specificities that comprise the culture of a specific society at a specific time in the social and economic history of a country.

'Critical post-modernism in late capitalism' leads directly to the questioning of Mode 1 knowledge practices and their equation with 'science'. Typically, Mode 1 knowledge is predicated on the Newtonian model of science which logically extends to the autonomy of scientists working within disciplines and being quality controlled by peer reviews. Predicated on a science that exists in harmony with society Mode 2 knowledge changes the epistemology of science and *a fortiori* of what counts as valid knowledge. It does not assume *a priori* the truth about the empirical world and what society demands, but engages that society in the establishment of 'the truth'. Science is practised by scientists while Mode 2 knowledge is generated and produced by practitioners from a wide array of interest groups and stakeholders in society and outside of universities and the disciplines

they house (cf. 1.1 and 2.3.1). It is typically based on knowledge produced in the context of solutions of temporary problems as identified from time to time by the interest groups and stakeholders with clear implications for the distribution of knowledge, accountability and quality control.

6.2.2 Empirical Investigation

An empirical investigation using combined quantitative and qualitative approaches was carried out at a selected Technikon. The results of the investigation are demonstrated in the following key themes: paradigm shift and pedagogy; trans-disciplinary curriculum development; partnerships; and community development; and the integration of education and training (cf. 5.3).

6.2.2.1 Paradigm-shift and pedagogy

Shifts in the ways in which knowledge is defined, perceived and produced distinguish the programme from both the typical 'cooperative education' technikon programme as well as the typical university programme (cf. 5.3 & 5.3.1). While the programme is in alignment with the essential imperatives of the new higher education policy and frameworks and bent on a technical, vocational and human capital paradigm, it is also overlaid with radical and humanist concerns. The emphasis on social distribution and community-orientation makes it characteristic of Mode 2 knowledge both epistemologically and organisationally. Through community and workplace research and learning projects the programme operates within an 'economically-oriented' paradigm and in this way contributes towards the economic growth and competitiveness of the country; while its focus on 'community development' assures a paradigm of 'equity and justice'. The mission of such a paradigm-shift is to produce relevant learning that elicits learner discovery and powerful learning environments and assumes that knowledge exists

within each learner and that this knowledge is further constructed and created in the process of learning (5.3.2 & 5.3.6).

6.2.2.2 Curriculum development

Defined unambiguously as 'the organisation of knowledge and work-based learning that emphasise learning outcomes rather than knowledge', a conception of the curriculum is provided that deviates from the traditional structured, linear, hierarchical conception. It attempts, consciously to embrace the letter and spirit of the NQF, to place diverse learners in the centre of the learning process, allow for self-paced individual study, group work and individual coaching, a modular format, a balance between theory and practice and the matching of workplace outputs with inputs in the learning process. The outcomes to be achieved by learners are specified by both the demands of the disciplines/ subjects/ unit standards as well as by the industry. They are obtained through needs analyses. This means that staff members begin the development of the curriculum with the end points, which are the outcomes and then design programmes that will achieve those outcomes (cf. 5.3.2). Thus it is clear that the programme self-consciously deviates from the traditional faculty curriculum by designing curriculum that is aimed at solving typical community and work-place problems and developed in close collaboration with external parties and stakeholders with emphasis on the specific industry. The problems are often of a temporary nature, giving rise to tensions between the inability (and indeed impracticability) of continuously revising the curriculum and achieving the outcomes sought. A large emphasis is placed on what happens in the workplace and the 'experiential' and tacit knowledge of the learners that require "...forms of pedagogical induction that favour apprenticeship, demonstration, different forms of assessment and different forms of display of mastery to those required by traditional university knowledge... which tends towards the discursive and thus favour traditional lecture and tutorial forms of induction....it is hard to do equal justice to both ends of the spectrum in the same organizational space: one form is likely to assert its dominance at the expense of the other" (Muller & Cloete, 2004: 2). Of course, the philosophy that learning should be linked to work is not new and can be traced back to the late nineteenth and early

twentieth centuries, to the ideas of John Dewey, John Locke and JJ Rousseau. The establishment of polytechnics in countries like the United Kingdom and Australia and technikons in South Africa are attempts to give concrete expression to this ideal.

The approach of members of staff to the curriculum suggest that the programme is on the right track in terms of Mode 2 knowledge but, its full spectrum of characteristics needs to be unpacked, communicated and experimented with. Furthermore, the process of implementation is uneven within modules of the programme and there is a need for consensus, if not standardisation, of the fundamental Mode 2 knowledge characteristics. In this way the national policy objectives of the NQF and the higher education policies and legislation will be achieved (cf. 3.4.1, 3.4.2 and 3.9.2). It is also clear that there is a need for support services to those tasked with producing and implementing Mode 2 knowledge programmes.

6.2.2.3 Trans-disciplinary and heterogeneity

The programme crosses the traditional disciplinary and subject boundaries of the Faculty and it also crosses the boundaries of the institution and collaborates with other institutions and organisations in order to allow students access to different employment pathways— in the community, industry and other related fields of work (cf. 5.3.2.3 and 5.3.2.4). Teaching and research staff cannot remain within the confines of the 'programme group' or the technikon and require new organisational arrangements, linking the technikon, industry, the government, non-governmental organisations and other partners. As counter to the more rigid subject-oriented courses, the programme emphasises the notion of 'learning programme' as recommended by the NCHE and developed in modular form (cf. 5.3.2.3).

The heterogeneity of knowledge and of knowledge producers is demonstrated in the diverse conditions of those who try to solve problems through research and teaching.

Participants take as starting points the demands of industry and the intellectual frameworks of all those who participate in the search, with a framework eventually evolving that is able to constitute a new point of departure from which further problems may arise. Accountability is not limited to the programme or even to the institution but to a host of external stakeholders in an 'open intellectual system' (cf. 5.3.3.4).

6.2.2.4 Partnerships and community development

Driven by community concerns for access of marginalised youth into higher education and to teach them skills that are needed in solving community problems the programme collaborates continuously with external stakeholders (cf. 5.3.5; 5.3.6). Such an approach is in line with the 'community service partnership model' and the role of active agents in meeting the economic and social needs of society. As Gibbons asserts: "As soon as one begins to focus on understanding complex systems the need for different types of expertise become obvious— and the need for partnerships and alliances becomes imperative" (Gibbons, 1998:54). The concomitant openness and exposure of the programme must be seen in the light of the changes in society, characterised by Gibbons' assertion that 'an overall increase in complexity which embraces a pervasive and inherent uncertainty, greater institutional permeability, the emergence of new forms of economic rationality and the emergence of a greater degree of self-organisation' (ibid; cf. 3.9.2.7). It has become a case of 'do or die' for higher education institutions to establish partnerships, both locally and internationally, that require new organisational arrangements. These need to be expanded to 'other forms of knowledge production' projects if the role of the university in the new millennium is to be reviewed as the new policy frameworks demand (cf.3.4.1 and 3.4.2).

6.2.2.5 Integration of education and training.

The main focus of the university today is "on widening access to new kinds of home students, developing courses relevant to economic and community demands" (Scott,

1997: 121). There is official recognition that lines of differences between university and technikon knowledge production have become 'blurred'. The programme investigated in the study represents such an example and has led to the pertinent claim by a director-general of education: "We saw universities clamouring towards offering more diplomas and re-jigging their programmes to half-mimic those of technikons; and on the other hand, technikons wanting to expend more resources on higher degrees at the expense of certificate and diploma programmes. This situation if allowed to continue unchecked could lead to a total collapse in skills levels crucial for a developing country" (Mseleku, 2002). The attempt by the programme in the case study of consciously and unconsciously resolving the tensions on knowledge production or 'the drift in knowledge' can be seen as an attempt at integrating education and training and by allowing the programme to be guided and directed by both the new National Qualifications Framework Act of the Department of Education and the Skills Development/learnerships framework of the Department of Labour. In addition, it relies on non-governmental actors such as the corporate sector for the funding of projects even if staff, contradictorily, view employers as the end-users and most important stakeholder of the programme.

6.3 RECOMMENDATIONS

In light of the pervasive influence of Mode 1 knowledge conventions and practices, recommendations for the promotion of Mode 2 knowledge in HE are aimed at three out of a number of (potential) stakeholders: government policy makers, governance structures and higher education institutions.

6.3.1 Policy makers

In the current policy context of a 'nationally co-ordinated' system for the higher education sector, the question of the autonomy versus the control is critical (cf. 3.6; 3.6.1). There are demands that range from more intellectual autonomy for universities by universities to more government control by both government and the private sector, over the type of knowledge that must be produced and the type of programmes and qualifications that are offered. For the government a positive correlation between HE and

economic development and the capacity of the country to compete internationally are imperatives (cf. 3.3 & 3.4) even though the unique consequences of globalisation on both developing and developed countries ensure that “all nations cannot develop equally” (Walters, 1981: 95). There are voices from within the higher education sector that demonstrate consensus with the new policy makers: “...universities in Africa cannot escape the responsibility of responding, in a new and creative way, to the serious challenges of capacity building and human resource development in Africa which is now being accorded such a high profile...they must strive to be key contributors to national capacity-building processes” (Ajayi, Ade Goma & Johnson 1996: 201). While the economic imperatives and ‘socially distributed’ aspects of knowledge production have been recognised by policy makers (cf. 3.9.1) implementation by institutions remains to be seen. This is so because academics generally at best are concerned about a close relationship with industry, the Department of Labour and other producers of knowledge and at worst reject being prescribed to. Academics also “often read policy as regulation and prerequisite for financial viability, thus losing the educational value of the new higher education policy” (Jansen 2001: 169) a reality that indicates that policy formulation is a necessary but not sufficient condition for the institutionalisation of Mode 2 knowledge. Indeed, innovative experimentation by institutions may well be said to precede policy making.

There is a need for policy makers to increase compliance through a variety of ‘carrot and stick’ mechanisms. These could include an audit and evaluation of all the programmes currently on the SAQA data base, distinguishing them as either Mode 1 or Mode 2 knowledge and then to associate each with one of the three types of institutions as established by the National Higher Education Plan (cf. 3.4). Financial incentives for programmes that are clearly distinguished as potentially contributing towards the economic growth of the country would create a situation that would go a long way towards reversing the self-evident elite status of institutions. The establishment of centres of excellence, rather than depending on the judgement of bureaucratic committees, should be determined by their potential to play a direct role in supplying relevant knowledge and skills to communities.

6.3.2 Governance of higher education

Traditional academic structures are restraints on responsiveness based as they are on specialisation which itself is a product of the now dated Fordist division of labour. Today specialist knowledge is not produced in disciplines or by 'experts' only, while the disciplines themselves show increasing fuzziness of boundaries. As is evident through its policies, government is quite clear on its objectives and has provided "the strategic framework for re-engineering the higher education system for the 21st century" (cf. 3.4). The institutions are less clear about their objective and strategic framework. A creative challenge for higher education governance is presented by the development of Mode 2 knowledge alongside Mode 1 knowledge. Sustainable relevance means adaptation to a more collaborative role in conditions in which there are more "potential knowledge producers on the supply side and the expansion of the requirement of specialist knowledge on the demand side" (Gibbons, 1994: *ibid*: 33). Governance structures such as the Council on Higher Education should take cognisance of the model of Mode 2 knowledge that broadens a shared system of governance and make it more inclusive and accountable to a wider range of stakeholders and constituencies. In this way the objectives of massification and democracy could be better realised. In place of a purely corporate or academic model, the establishment of a framework of governance that balances the 'economic paradigm' with the 'common-good paradigm' (Marks, 1999a; 2002b) will make no constituency the dominant force in a shared system of governance since engagement by each can be vetted by the other. The demand, for example, by industry and business for more effective preparation for the world of must be weighed against the other dimensions of education such as for example citizenship, morals and ethics.

6.3.3 Institutional change

To remain or become 'sustainably relevant', institutions need to avail resources in both finances and staff so as to consolidate and undertake a variety of tasks. We focus on two

specific tasks here, namely, re-training in pedagogies, including an affirmative action strategy; and the setting up of trans-disciplinary structures.

6.3.3.1 Pedagogical training

While the capacity of higher education for change has been demonstrated in the past few decades, its' resistance to change is equally formidable. This coincides with the challenges arising out of massification, fiscal constraints and the increasing demands from government for 'sustainable relevance' of higher education institutions. How can institutions ensure that the knowledge contained in the qualifications they offer serves the purposes of both social *and* economic development? The short answer lies in training and retraining in pedagogies that support such development. Academics at South African universities struggle both conceptually and practically with the Gibbons' thesis (Jansen J in Kraak (ed.) 2000). Yet it is precisely higher educationists as primary producers of knowledge that need to use their positions and capacities to ensure a critical mass of consensus round interpretations of key education and training concepts and processes such as outcomes-based education and training and the national qualifications framework.

In the current hegemonic Newtonian, Mode 1 knowledge culture, knowledge is typically defined in and qualified by the adjective of 'scientific' and it is conventional to speak of science and scientists. Induction and training in Mode 2 knowledge pedagogy with its new orientation and vocabulary (for example 'practitioners' rather than 'scientists', 'knowledge' rather than 'science') is essential if the imperatives of the new higher education policy framework are to be realised. Such pedagogy favours key concepts such as learner centred-ness and work-readiness and places high value on the tacit knowledge of the working learner acquired through life and work. The delivery and implementation of apprenticeships, learnerships and skills programme will provide concrete outcomes for such pedagogical training. The accomplishment of this recommendation will culminate in the resolution of the tension between education (Department of Education) and training (Department of Labour). And, if the 'Africanists' are correct in claiming monopoly over

the 'language of the marginalised', an affirmative action retraining policy and strategy is required for the previously advantaged (white people) who were excluded from participation in the projects of the marginalised either voluntarily or by law and convention and who ostensibly, are not conversant with this 'language'.

6.3.3.2 Trans-disciplinary structures

Through disciplinary training individuals learn to share a specific world-view and to value what the discipline dictates to be significant problems as well as how they are defined and solved. As this study has demonstrated, such a world-view is out of sync with a period of late capitalism. The focus on programmes aimed at ordinary workers presents both a challenge and opportunity to higher education institutions. Trans-disciplinary structures in every faculty should be dedicated to the delivery and implementation of 'non-academic', non-Mode 1 knowledge programmes such as apprenticeships, learnerships and skills programmes. There is need to change academic rules of competition and co-operation in order to allow researchers to work in teams on problems set in complex social contexts; to allow for rapid and flexible responses to transient problems; to make the sharing of intellectual and capital resources necessary; to recognise the need for horizontal rather than vertical co-ordination; and to allow for frequent and informal communications among team members (Gibbons, 1999: 77- 81).

6.4 LIMITATIONS

The empirical investigation provided insight into the process adopted by the participants in the production and implementation of knowledge. The author, being acutely aware of the small size of the 'sampling' and the absence of empirical evidence on other similar or dissimilar programmes, as well as the selection of a single case study from a sub-sector (technikons) of the higher education sector, made no claims for the external validity of the findings. Hopefully such limitation was compensated by 'thick-rich' and detailed descriptions of the single programme. Data captured by the quantitative surveys was standardised and reduced to trends which were further corroborated and complemented by the 'thick-rich' descriptions revealed by the qualitative data. Claiming no external

validity, the single case study showed the common as well as the diverse in the perceptions, insights and understandings of participants. Important areas for future research include a more precise and detailed comparison between Mode 1 and Mode 2 knowledge programmes in the HE sector, the relationship between Mode 1 knowledge and implementation of the new higher education policy frameworks and a possible model for the development of Mode 2 knowledge programmes that cohere closely with the Gibbons thesis.

6.5 SUMMARY

Mode 2 knowledge has grown out of Mode 1 knowledge and is very much in flux, requiring a new orientation and indeed a new vocabulary and 'language of communication'. We need to theorise and experiment with ways of systematic investigations that can clarify ways of implementing Mode 2 knowledge programmes in HE. The universities in the twenty-first century in a democratic South Africa need to re-assess their roles in the production of knowledge "Universities and technikons should not use the principle of institutional autonomy as a pretext for resisting democratic change *through the fixation on the academe and the marginalisation of new forms of knowledge production*" (emphasis added) (Minister of Education, 2004). A defensible promotion of new forms of knowledge production, amongst which falls Mode 2 knowledge, requires intellectual interventions that have the potential to reconstitute the system of questions about knowledge that it seeks to answer. The proposal for a newly reconfigured theory of 'critical post-modernism in late capitalism' hopefully serves the purpose of guiding higher education institutions to adapt to the new conditions for knowledge production. The impact of the Mode 2 knowledge thesis on higher education institutions in South Africa cannot be predicted. The reconciliation of Mode 1 knowledge with Mode 2 knowledge will remain unrealised without a leap of faith by scientists, academics and practitioners. To begin with, they will have to avoid claiming superiority over one another. As the case study demonstrates, Mode 2 and Mode 2-type knowledge programmes are different to Mode 1 knowledge programmes in that they have different

sets of cognitive and social practices which have different purposes and emphases that quite deliberately happen to be responsive to the demands of the new millennium at all levels: economic, social and educational.

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