Conceptualising differentiated forms of knowledge: the Medical (MBChB) curriculum of the University of Cape Town

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This work has not been previously submitted in whole, or in part, for the award of any degree. It is my own work. Each significant contribution to, and quotation in, this dissertation from the work, or works, of other people has been attributed, and has been cited and referenced.

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Dedication

Firstly, in memory of my Mother, Sheila Dodd, who obtained a BA in English in 1946 (see Appendix 9). And now, 64 years on, I am hoping that I can also be awarded a degree through UCT!

Secondly, my colleague Dr Lindsay Weight and I started this journey together, which we were meant to complete with a Master's degree; but, for Lindsay, that was not meant to be. This is also in memory of you!

Acknowledgements

I wish to express my high regard for the dedicated way in which my supervisor, A/Professor Suellen Shay, guided me on this lengthy journey of discovery and to thank her very sincerely. Suellen committed an extraordinary amount of time to showing me how to move from thinking as a Natural Scientist to thinking in the way of the Humanities.

I am deeply grateful to my colleagues at the University of Cape Town who trusted me with the interviews about their fields of specialisation. Each interviewee spent a considerable amount of valuable time with me, answering the questions posed, and I appreciate the time that these four colleagues made available and the effort that they put into assisting me gather my data.

I would also like to thank my colleagues in the Department of Human Biology for encouraging me with this study, as well as for their understanding when it came to the time that I needed to spend away from my routine tasks while researching the data and writing up this thesis.

I am very grateful to Ms Carolyn Butler for assisting me so diligently with the work of proof-reading the final draft version of this thesis.

Abstract

Two major features characterise the change to the Medical curriculum at the University of Cape Town, which occurred in 2002, namely:

- a traditional didactic approach to teaching was replaced by a problem-based learning programme, and
- the traditional biomedical model was replaced by a bio-psychosocial model, unofficially referred to as a "bio-psychosocial / spiritual" model by the staff.

The change to the curriculum necessitated a lengthy process of planning and design, implementation, and continuous review. Crucial to this on-going process of curriculum review is a better understanding of how disciplinary knowledge is recontextualised into educational knowledge.

This study is an investigation into the concepts of differentiated forms of knowledge that inform the Medical (MBChB) curriculum of the University of Cape Town (UCT). The object of this research project is to classify, describe and compare the forms of knowledge present in two selected subject areas, each made up of specific specialities (disciplines), within courses in Years 2 and 3 that form a major portion of the programme.

Using the concepts of "hard" and "soft" sciences (Natural Sciences versus the Humanities), two subjects were identified that fell into different quadrants of Biglan's classification of subjects (Biglan, 1973a,b). The two subjects chosen were Chemical Pathology and Culture, Psyche and Illness. Data were collected from course documentation, interviews with members of staff, and examples of assessments. These data were then analysed using Maton's legitimation code theory, which identifies four legitimation codes based on the Epistemic Relation (ER) and the Social Relation (SR), namely a Knowledge Code, a Knower Code, a Relativist Code, and an Élite Code. These four categories were used to determine what is valued in the two subjects, using the relative strength or weakness of each of ER, SR, classification and framing.

Chemical Pathology emerges as a Knowledge code for the Specialist, the discipline and the undergraduate subject. Culture, Psyche and Illness is a subject that represents five different disciplines, and the Specialists in these areas act as recontextualisation agents for the undergraduate curriculum. An analysis of the course documentation for CPI reveals that both Knowledge and the Knower are valued as a basis of achievement, indicating an Élite code. Interviews with two key staff members involved in the recontextualisation process reveal a different emphasis in their goals for curriculum design. For Psychiatry, both the Knowledge and the Knower are highly valued, whereas for Medical Anthropology,

the development of the individual is foregrounded. These differences in emphasis are an indication of differences in what is valued by these Specialists within their disciplines.

The conclusions investigate whether tensions may arise if, in a curriculum intended to be an Integrated Code, there are subjects that resemble what would be expected in a Collection Code. The implications of variable degrees of compliance with the desired bio-psychosocial model are also explored. Furthermore, comment is made regarding whether it presents difficulties if a subject has different codes of legitimation for the Specialist, the discipline and the undergraduate subject. Finally, it is emphasised that individual subjects may have different roles to play within the bio-psychosocial curriculum, and it may be more appropriate to focus rather on the overall goals of a curriculum, while acknowledging that different bases of legitimation exist within the programme as a whole.

Chapter 1: Introduction

1.1 Introduction

What is the "curriculum"? Bernstein (1975) defines a curriculum as "the principle by which certain periods of time and their contents are brought into a special relationship with each other" (p.79). Based on the writings of Bernstein over the years, Bertram *et al*. (2000) explain that the word has many interpretations, including something that is moving and changing, a range of subjects (content), the means through which the content is delivered and assessed, the aims and objectives of a programme, the strategies of teaching and learning, a reflection of the needs and interests of Society, and so forth. There is, therefore, a strong social context within a curriculum (Bernstein, 1975). There are three categories into which a curriculum can be divided, namely *intended*, *enacted* and *achieved*, each aspect of which needs to be addressed when considering the nature of an educational programme.

1.2 Changes to the Medical degree at the University of Cape Town (UCT)

For many decades, the Bachelor of Medicine / Bachelor of Surgery degree (MBChB) was designed in the form of a six-year model, where the first three years were called "preclinical", and involved the study of the Basic and Laboratory Sciences, followed by Years 4 to 6, the "clinical" years, which involved the study of the Clinical Sciences. The Basic Sciences laid the foundations for the later study of Clinical Medicine. What characterised this type of programme is a Collection Code (Bernstein, 1975), where a series of many subjects (representing various disciplines) was studied by the students in a very specific sequence across the six years, with well defined boundaries around each of the subjects. This model of curriculum was terminated in 2002, with the launch of the "new" curriculum.

This new model of the MBChB degree is defined as a bio-psychosocial model, referred to by staff members as a "bio-psychosocial / spiritual model". This curriculum is intended to be delivered in a systems-based, multidisciplinary, fully integrated (interdisciplinary) way (Integration code, Bernstein, 1975), using the educational model of "supported" Problem Based Learning (PBL), and thoroughly grounded in the principles of Primary Health Care (PHC). The details of the UCT Graduate Profile and the Principles of PHC are listed in Appendices 1 and 2, respectively. The mode of delivery is based on the PBL process, where facilitated small group sessions are an important aspect of the weekly learning activities for students. All other daily activities revolve around provision of support for the PBL process, hence the use of the phrase "supported" PBL. One of the fundamental ideas is to have horizontal integration (between subjects delivered during the course of each year) and vertical integration (between Years 1 to 6), and for there to be a "spiral of learning", *id est*, revisiting topics repeatedly over the years, each time at greater depth and/or approached from a different learning angle.

1.3 The concept of an Integrated Curriculum

Educators involved in the planning, delivery and review of curricula in higher education are increasingly proposing that curricula be of an integrated, multidisciplinary format. Specifically with respect to curricula for the undergraduate Medical degree, there is a small but growing body of literature that reports on research into the value of the horizontal integration of subjects, and the delivery of course material that contextualises the study of the Basic Medical Sciences in a clinical setting. Providing the context for studying a body of knowledge ensures more active learning on the part of the student, motivates students to study, and ensures better retention of knowledge over time. Shimura, Aramaki, Shimizu, Miyashita, Adachi and Teramoto (2004) point out that in order for an integrated Medical curriculum to gain interdisciplinary acceptance, the curriculum should be constituted using all Medical disciplines related to the specific organ or system involved in the disease process under study. In their article, Saleh, Messner, Axtell, Harris and Mahowald (2004) find that the integration of three clinical disciplines related to musculoskeletal disease resulted in a highly effective introductory course for second year Medical students, effectively increasing students' knowledge (including retention of knowledge), confidence, and satisfaction. Allen and More (2004) describe their restructured integrated curriculum as an innovative programme which involves cooperative, outcomes-focused planning by multidisciplinary teams, and their curriculum stresses integration and application of biomedical concepts to the real-life health care problems faced by the patients who receive care from general practitioners.

1.4 The Problem Based Learning (PBL) approach as an educational model

The basic concept of the PBL approach to learning is that students are provided with a series of clinical vignettes that encompass basic clinical details, from the presentation of the patient and history taking through to making a diagnosis and offering suggestions for the treatment and management of the patient. Schoeman, Van Schoor, Van der Merwe and Meintjies (2009) define PBL in Medical Education as a student centred method of learning that uses clinical cases as problems to serve as challenges for self directed, independent and cooperative study in a small group setting. Each of the PBL sessions is guided by a facilitator who has undergone special training.

1.5 Intended outcomes of a PBL curriculum

Spencer and Jordan (1999) explain that Medical Education is a life-long process embracing medical experience, undergraduate education, general clinical training, Specialist or vocational training, subspeciality training, and continuing Medical Education. In her 2003 article, Wood writes that group learning facilitates not only the acquisition of knowledge, but also several other desirable attributes, namely communication skills, teamwork, problem solving, independent responsibility for learning,

sharing information, and respect for others. She prepares a list of the advantages and disadvantages of PBL, which indicates tensions that may arise in students and staff when it comes to making a change from the traditional, classic programme (Collection Code) to that of a PBL model (Integration code). According to Azer (2004), PBL serves as an educational method that aims to foster self-directed learning, integration across disciplines, small-group learning, and decision-making strategies with a student-centred approach. The success of such a programme depends heavily on appropriate learning activities, attitudes and approaches, and personal development of students.

1.6 Background on the course design of the current Medical curriculum at UCT

The "supported" PBL curriculum can be divided into Years 1-3 and Years 4-6, for simplicity. The first three years are divided into six semesters of systems-based discipline-integrated teaching and learning. The concept of "systems-based" arises from the fact that the body can be divided into the nine functional systems of the body. The delivery of the material is in finite components that are based on each of these carefully sequenced systems. The concept of "discipline-integrated" arises from the delivery of the curriculum via several disciplines concurrently, thus avoiding the compartmentalisation of bodies of knowledge that was a feature of the previous, traditional curriculum. The second three years (Years 4-6) actually resemble the way they were structured in the "outgoing curriculum", namely rotations through the various clinical "firms" in a set number of finite time blocks. The delivery of this bio-psychosocial model of the curriculum is as a "spiral of learning" – requiring that students acquire knowledge in broad overview initially and then build on that foundation as time passes.

The goal is to have all six years of learning thoroughly grounded in all aspects of Public Health, and has an overall philosophy that is aimed at students becoming self-directed and life-long learners. The intended (and enacted) curriculum is that of a bio-psychosocial / spiritual model for a patient. This model encompasses the biology of the human body ("normal" and "abnormal" structure and function), the diagnosis and management of disease conditions, the study of the mind, and a constant consideration of the social setting of the patient – the individual, the family setting, the implications at the work place, and the community as a whole. Therefore, psychosocial and spiritual aspects are emphasised in this curriculum. Students experience early clinical exposure to patients and clinicians, and the teaching and learning of the Basic and Diagnostic / Laboratory Sciences occur within a contextualised educational environment, which may be symbolised as follows:

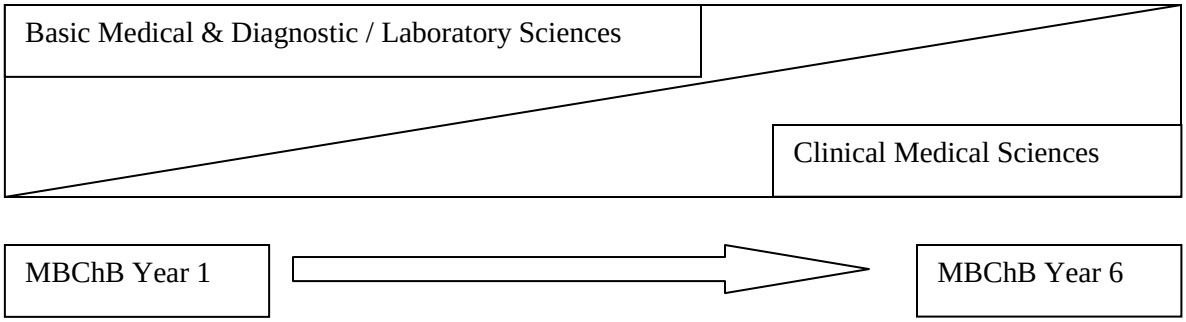


Figure 1: The overlap of the Medical Sciences across the programme.

In particular, Years 2 and 3 are when the students learn about "normal" and "abnormal" structure and function. The learning style is grounded on "supported" Problem–Based Learning (PBL), based on 20 paper case scenarios planned by a multidisciplinary Design Team, the members of whom determine what disciplinary content needs to be covered in each of these case scenarios. This portion of the MBChB programme is divided mainly into Integrated Health Systems (IHS), comprising the Basic and the Diagnostic / Laboratory Sciences, and Becoming a Doctor (BaDr), comprising Family Medicine, Clinical Skills, Afrikaans, and Xhosa. Traditionally, the Medical curriculum has always been based on a "biological" model, assembled by a collection of modules with strong boundaries between disciplines (Bernstein, 1975). In contrast, the incoming curriculum serves a "bio-psychosocial" model – with the psychosocial aspects of the patient now emphasised to a far greater degree than before, styled as a more integrated curriculum (Bernstein, 1975). Faculty staff members, who are valued as experts in these fields and who have a strong feeling of identity in their disciplines (Henkel, 2000), design the learning activities for students and guide them in their educational journey. The goals of Faculty are that students should indulge in self-directed learning, and should become life-long learners; should be at ease with communicating with their patients and colleagues; and should be comfortable with admitting gaps in their knowledge and knowing how to fill these gaps.

1.7 Development of the official Faculty "core" document for the UCT MBChB Programme

During the course of several ongoing large workshops being held at the Faculty of Health Sciences over the past years, all departmental and divisional submissions of "core" learning material, namely content and skills specific to the disciplines of these departments and divisions for the full six years of the MBChB programme, have been rigorously interrogated. The objective has been to refine all submissions, bearing in mind the knowledge and skills requirements of the graduate "generalist" who would need to

function semi-autonomously as a pre-registration Intern and then Community Service Officer in the Republic of South Africa. (The UCT MBChB Graduate Profile appears as Appendix 1.) The Deputy Dean (Education), Prof. Gonda Perez, indicated at the time that what should emerge out of this process were definitive "core" learning outcomes for the MBChB programme that would:

- inform all departments/divisions about what needs to be taught during the six years of the programme
- inform the students (and the latest Accreditation Panel of the HPCSA, which re-inspected Years 4 to 6 in October, 2007) of what we expect them to know for the purposes of assessment
- be used as the basis of assessment of students (so that core learning is appropriately featured and weighted in future student assessment\s).

1.8 Implementation of the PBL curriculum model at UCT

Some three decades ago, a radical change to teaching was being implemented at the tertiary institutions of Maastricht (The Netherlands) and McMaster (Canada). The pedagogic device was reported to be a radical shift away from delivering the material in defined silos of knowledge with strong boundaries between disciplines (Collection Code) to that of a set of student-centred learning activities, where the role of the staff changed to one of facilitating and guiding students' learning. During the early 1990's increasing pressure was being applied by senior staff within the Faculty of Health Sciences at UCT to form a team to examine ways in which the Medical curriculum could be changed, and an announcement was made by senior management that the traditional Medical curriculum needed to be replaced by a PBL curriculum. The date of implementation was set as January, 2002.

1.9 The role of the PHC principles in the design of the Medical curriculum

An important intention of the various Design Teams involved in the MBChB Programme is to have the teaching and learning in all six years of the curriculum thoroughly grounded in all aspects of Public Health (Population Perspectives) to ensure that graduates will be able to function fully in a Primary Health Care (PHC) environment. As defined by the Alma-Ata Conference in 1978 (Alma-Ata is in the old USSR, now called Almaty in Kazakhstan), health is a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity (Draper, 2006). The principles of PHC need to be a "golden thread" throughout the programme at UCT.

According to Irlam, Keikelame and Vivian (2009), the Faculty's policy on the PHC Approach provides the basis for identifying the following principles that should underpin the values and skills required of UCT graduates, namely:

- Promoting equity and human rights in health care
- Displaying bio-psychosocial-cultural sensitivity towards the patient
- Practising health promotion at the individual and community level
- Promoting evidence-based and cost-effective health care
- Treating patients at the appropriate level of care
- Promoting multi-professional and multi-disciplinary health care
- Promoting broad intersectoral collaboration
- Encouraging communities' involvement in asserting their rights and interests
- Monitoring and evaluating the effectiveness, efficiency and equity of health services

The designers of the Medical curriculum at UCT have been focussing on how to achieve the aims of the modules in which each staff member is involved. The aim, in general, is ultimately to ensure that a PHC approach is part of the "Being" of a graduate of this programme, as described in the work of Barnett (2000) and Barnett and Coate (2005).

1.10 The research area to be addressed

Given the goal to establish an integrated, multidisciplinary PBL Medical curriculum based on a bio-psychosocial model by existing staff members at the Faculty, questions arise as to how staff are changing their approach to the delivery and assessments of a wide range of subjects within their disciplines. The challenges would be to embrace cross-disciplinary teaching, to deliver material that is well contextualised with respect to clinical relevance and that addresses each aspect of the bio-psychosocial model, and to track the personal development of the undergraduate student as (s)he advances through the programme. All of these challenges will require reflection on the types of knowledge that will be valued in such a programme, and the research question here relates to establishing how, in specific subjects, staff members have tackled this issue. These are important areas to investigate, as the results may throw light on the degree of success at the Faculty of establishing the bio-psychosocial model of the fully integrated curriculum.

1.11 Aims and objectives

This aim of this investigation is to determine the concepts of differentiated forms of knowledge that inform the Medical (MBChB) curriculum of the University of Cape Town (UCT). The study will address the question of what characterises the nature of the different forms of knowledge in particular disciplines

that lead to the construction of the MBChB curriculum. Thus, the object of this research project is to classify, describe and compare the forms of knowledge present in two selected subjects, each made up of specialities (disciplines) which are part of the same course in Years 2 and 3 of the MBChB programme, namely Integrated Health Systems (IHS).

The results of this exploration will:

- assist with the review of the success of Years 2 and 3, within the curriculum as a whole, in delivering the bio-psychosocial / spiritual curriculum model of choice
- shed light on the methodologies used by individual staff members to design and deliver their material
- reveal possible tensions between personal philosophies of staff members and the intended outcomes of the MBChB curriculum as a whole
- uncover information about the teaching of and learning by students
- provide insight into assessment methodologies employed by individuals.

1.12 Preview of the research project

Firstly, the literature will be reviewed in order to provide an overview of current studies of different types of curricula. Then follows a description of the theory which provides the basis for the research tools used in this study. Thereafter, the data is analysed, and conclusions are drawn which relate to the objectives of the research.

Chapter 2: Literature Review

Any shift to an Integrated Code, as has occurred with the Medical curriculum, will have implications for that curriculum and the kinds of knowledge which are privileged. Underlying this is a longstanding debate between the Natural Sciences and the Social Sciences.

2.1 The interplay between the Natural Sciences and the Social Sciences

The first portion of the literature review explores the development of ideas addressing the interplay between the Social Sciences (the Humanities) and the Natural Sciences. In early writings, authors differentiate between the body of knowledge, referred to as "the knowledge", and the individual who is studying that material, "the Knower". Furthermore, they attempt to compartmentalise knowledge according to certain shared characteristic features. The relevance to the current study is that the various analyses of types of knowledge guide the categorisation of many of the subjects and courses within the UCT MBChB programme, thus enabling the identification of two subject areas with differing characteristics that can then be compared.

Through personal communication in 2008 with the late Medical Anthropologist Dr Cecil Helman I became aware of the prevailing idea that "the person" has been taken out of the practice of modern Medicine, resulting in an increase in consultations with practitioners of complementary (alternative?) forms of healing. Helman traced the root of this problem to "the Cartesian mind-body split". Hooker [*http://www.wsu.edu~dee/*] states that René Descartes (born 1596) is arguably perceived to be the single most important thinker of the European Enlightenment. Apparently he methodically went about tearing down all previous forms of knowledge and certainty, and replaced them with a single, echoing truth: *Cogito, ergo sum*, "I think, therefore I am". From that point onwards subjective truth would hold a higher and more important epistemological place than objective truth and the mind would be separated from the body, resulting in the Cartesian mind-body split. Yee [*http://www.dannyreviews.com/h/*] cites an influential Rede Lecture by British scientist and novelist C.P. Snow entitled *The Two Cultures*, delivered on 7th May, 1959. The theme was that the breakdown of communication between the "two cultures" of modern society — the Sciences and the Humanities — was a major hindrance to solving the world's problems. In 1966, the Sociologist Storer presented his ideas about the "hard" and the "soft" sciences to a group of librarians at a conference (Storer, 1967). He characterised the word "hard" as implying tough, brittle, impenetrable, strong, impersonal, aggressive, having a sharp concern for the letter of the law, difficult, and laborious. On the other hand, he characterised "soft" as indicating weakness, gentleness, malleability, sympathy, warmth, informality, easy, and not demanding a great deal of effort. He then applied these definitions to certain subjects and to the idea of professional recognition. He stated that the

degree of rigour of the organisation of the body of knowledge is a reflection of "hard" versus "soft", and the "harder" a discipline is, the greater the degree of impersonality of the authors (Storer, 1967). Storer and Parsons (1968) present their points of view on how and why the academic profession became divided into disciplines, each concerned with a particular area of knowledge. Interestingly enough, they write that validity in the Natural Sciences is assumed to rest on the empirical test, as opposed to the Social Sciences where it is determined mainly in terms of agreement with the basic framework of values and meaning. Storer (1972) writes of the division of the scientific community into areas, disciplines, specialities, and subspecialities, resulting in heterogeneous structures, with differences among the various bodies of knowledge. For such a system to function there needs to be a measure of consensus within a discipline or speciality, and this is where a problem arises. In a relatively "hard" discipline, one whose body of knowledge is cast largely in quantified terms, it is comparatively easy for colleagues to establish the degree of validity and significance of contributions. On the other hand, in a "softer" science, the criteria for allocation of recognition are fuzzier and the relationship between contribution and recognition is less clear-cut.

Drawing on these prevailing views, Biglan (1973a,b) presented a short paper on his analysis of the characteristics of subject matter in different academic areas on the multidimensional scaling of scholar's judgements about similarities of subject matter of different academic areas. He questioned the nature of the differences between the fields of different subjects, and related the analysis to the relationships between subject matter characteristics and departmental organisation. In his methodology, Biglan used non-metric multidimensional scaling, originally developed by authors such as Kruskal and Shepard, for determining the "important" characteristics or dimensions of academic subject matter. Biglan states that this technique allows for a comparison among all academic areas within the same framework, without oversimplification associated with a single dimension.

Referring to Kuhn's 1962 publication, Biglan (1973a,b) describes the term "paradigm" as a body of theory that is subscribed to by all members of a field – resulting in important organisational functions, providing a consistent account of most of the phenomena of interest in the area, and defining problems for further research. He states that fields with a single paradigm have greater consensus about appropriate content and method than nonparadigmatic fields. Furthermore, a paradigm permits structural and output features to develop, unlike nonparadigmatic fields. The existence of the paradigm also permits greater social interconnectedness amongst scholars and provides a common framework of content and method, with minimal effect of differences in orientation between scholars. In contrast, nonparadigmatic fields require of scholars that they reach a measure of consensus – a common definition of problems and method of approach – before they can work together. Both content and method appear to be idiosyncratic

in the approach. He further expands these concepts into the impact that paradigmatic and nonparadigmatic fields have on graduate courses, time spent on teaching, and research output (publications).

In summary, Biglan (1973a,b) lists three dimensions that characterise the subject matter of academic areas in most institutions, namely the degree to which a paradigm exists, the degree of concern with application, and a concern with the life systems.

He proposes that these three characteristics may have an important effect on the type of structure and output a department has and may provide a framework for studying the cognitive style of scholars in the different areas. Two separate graphs are provided below, but these graphs should be superimposed, allowing a three-dimensional view of the depiction, such as:

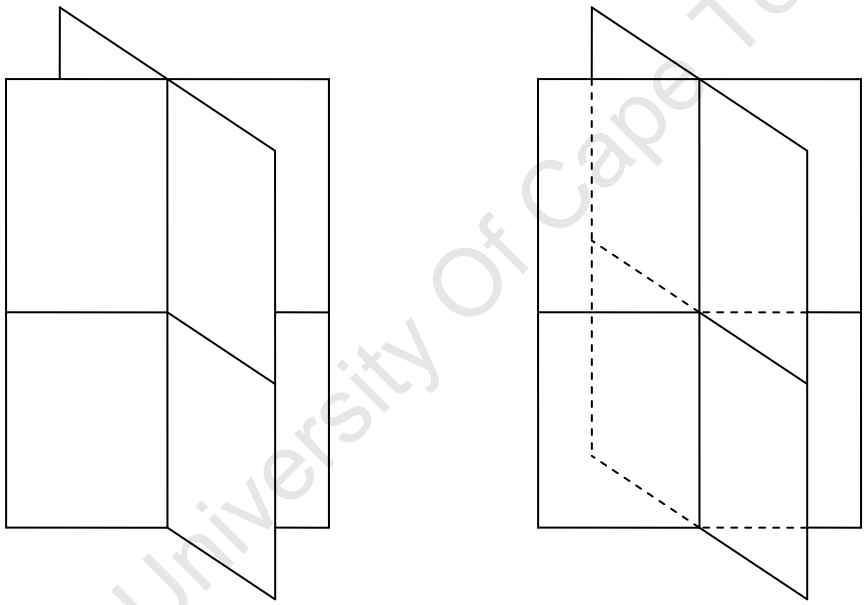


Figure 2: 3-D depictions of the graph.

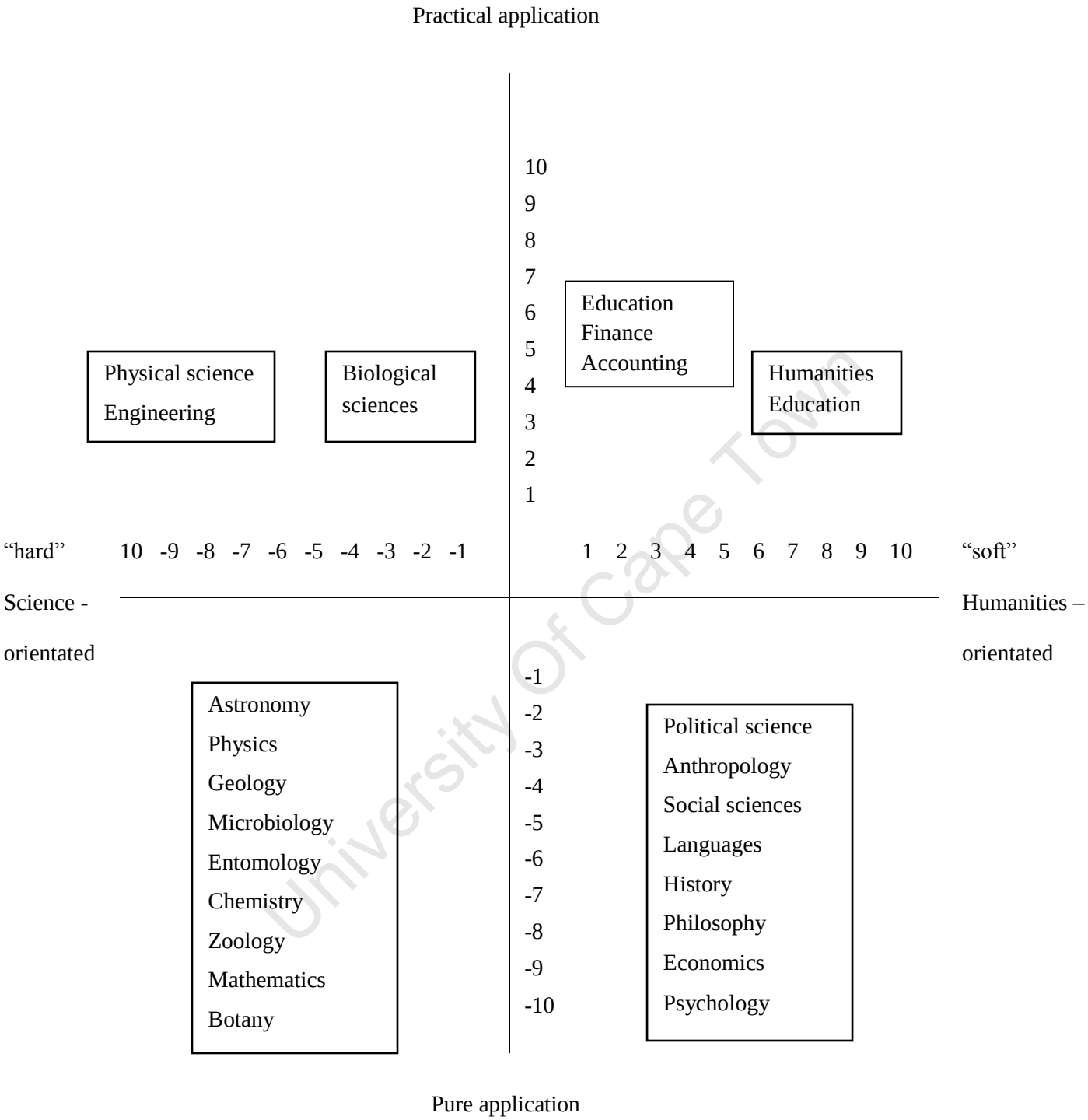


Figure 3: Transcript, covering where various types of studies lie in relation to the dimensions studied by Biglan (1973a,b).

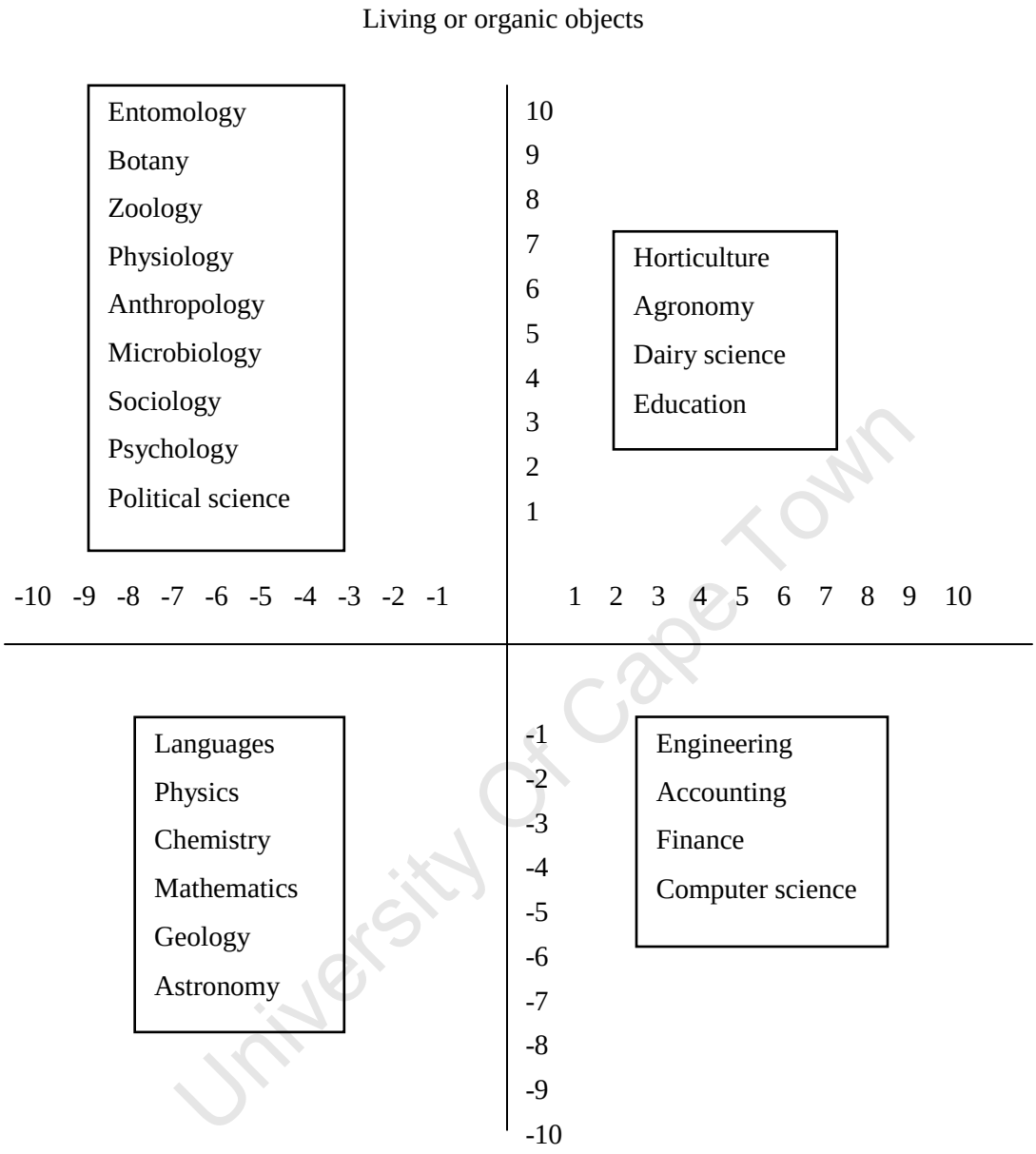


Figure 4: Transcript, covering where various types of studies lie in relation to the dimensions studied by Biglan (1973a,b).

Braxton and Hargens (1996) quote the work of Storer, as one of the first to argue that much of the previously observed interdisciplinary variation could be explained in terms of two underlying dimensions, labelled "hard-soft" and "pure-applied". Storer's papers attracted little attention outside of the sociology of science subfield, and it was years before the research agenda he outlined was taken up in earnest. They claim Biglan resuscitated the hard-soft, pure-applied distinctions drawn earlier by Storer. The work of Storer and Parsons (1968) is taken up in more recent writings by Becher and Kogan (1992) and Becher and Trowler (2001), who define "cultures" as sets of values, attitudes and ways of behaving that are taken for granted, all of which "are articulated through and reinforced by recurrent practices among a group of people in a given context" (Becher and Trowler (2001), page 21). When these concepts are applied to academics, they reflect the ways in which professionals organise their lives, related to the intellectual tasks in which they are engaged. The ways in which academics engage with their subject matter and develop their narratives will structure their disciplinary cultures. A specialised field of a discipline will display certain structural features which distinguish it from other fields of specialisation within the same discipline, yet which it may share with specialisations in other disciplines.

The authors adapt their knowledge and disciplinary groupings from that of Becher (1994), as reflected below:

Disciplinary groupings	Nature of knowledge
Pure sciences (hard-pure)	Cumulative; atomistic (crystalline / tree-like); concerned with universals, quantities, simplification; impersonal, value-free; clear criteria for knowledge verification and obsolescence; consensus over significant questions to address, now and in the future; results in discovery / explanation.
Humanities Pure Social Sciences (soft-pure)	Reiterative; holistic (organic / river-like); concerned with particulars, qualities, complication; personal, value-laden, dispute over criteria for knowledge verification and obsolescence; lack of consensus over significant questions to address; results in understanding / interpretation.
Technologies (hard-applied)	Purposive; pragmatic (know-how via hard knowledge); concerned with mastery of physical environment; applies heuristic approaches; uses both qualitative and quantitative approaches; criteria for judgement are purposive, functional; results in products / techniques.
Applied Social Science (soft-applied)	Functional; utilitarian (know-how via soft knowledge); concerned with advancement of professional practice; uses case studies and case law to a large extent; results in protocols and procedures.

Table 1: Knowledge and disciplinary groupings, from Becher and Trowler (2001).

The article by Neumann, Parry and Becher (2002) extends the work of Biglan by providing a conceptual analysis of teaching and learning in the disciplinary contexts. The authors provide an organisational framework of undergraduate teaching and learning, based on knowledge-related studies (curriculum, assessment and cognitive purpose) and socially related studies (group characteristics of teachers, types of teaching method and student learning requirements). The purpose was to address a systematic analysis of well-known university activities. They took the systematic grouping of disciplines derived from Becher (1989) from the earlier work of Biglan (1973a,b) and Kolb (1981), based on the epistemological characteristics of hard pure, soft pure, hard applied and soft applied. The authors acknowledge that disciplines may straddle two categories, may have deviant subspecialities, and that disciplines may change categories over time. They then provide definitions of the types of knowledge in each of the four categories, the main cognitive purpose of each category, and the implicit requirements of students for each of the domains. They conclude their article by discussing the implications of their categorisations on such aspects as staff development, the development of information technology, assessment practices, and employability and job status.

When reflecting on the curriculum, the authors state that hard pure curricula tend to be conceived as linear and hierarchical (building blocks). Subjects of the soft pure domain are described as spiral in their configuration (citing Bruner, 1967), returning with increasing levels of subtlety and insight into already familiar areas of content. These curricula encourage students to develop critical perspectives. Therefore, these two curricula reflect back to Biggs's (1999) distinction between quantitative and qualitative curriculum objectives, including the way in which they are measured.

Regarding the main cognitive purpose, the authors make the following claims, encapsulating what Biglan (1973a,b) and Becher and Trowler (2001) were capturing respectively in their graphs and tables:

- Hard pure knowledge – the aim is to enhance the students' powers of logical reasoning – application and testing of ideas in congruity with a linear form of argumentation – facts, principles, concepts, classification, categorisation, description, use of accepted scientific viewpoints.
- Soft pure knowledge – the emphasis is on a broad command of intellectual ideas – creativity in thinking and fluency of expression, with a wide range of powers of analysis and synthesis – relating to the achievement of personal growth and the development of individual interpretations of experiences – broad general knowledge, character development, critical thinking, creativity, debate of perspectives.

- Hard applied knowledge – the emphasis is on problem solving and practical skills, the integration and application of existing knowledge.
- Soft applied knowledge – practice-related skills are important – knowledge tends to be more eclectic, and the emphasis is on personal growth and intellectual breadth – reflective practice and lifelong learning skills.

2.2 The use of Biglan's classification system in curricula

This part of the discussion gives examples of researchers who have used Biglan's classification as a tool for their studies, including authors who reject that framework of classification as a valid explanation for the differences that they found.

Bazerman (1981) conducted an analysis of three texts that typify divergent fields, if Biglan's theory of quadrants is used. He used the 1953 article in Nature by Watson and Crick that suggests molecular structure for deoxyribose nucleic acid, a 1963 article in the European Journal of Sociology by Merten on the Sociology of Science, "The Ambivalence of Scientists", and Hartman's essay, "Blessing the Torrent: On Wordsworth's Later Style". What emerged is how the message conveyed differs according to the field in which the work is situated.

Donald (1995) characterises the criteria to be met by scholarly disciplines, claiming that according to the degree to which these criteria are met, disciplines may thus be grouped as well structured or paradigmatic, thus hard or restricted, or else as soft, unrestricted or less well structured, which links directly to the earlier work by Biglan. She explains that "unrestricted" relates to the field of phenomena being relatively unlimited; the method of validation processes is typically hermeneutic (interpretive) in the Humanities ("soft") versus problem solving and the scientific method in the Sciences ("hard").

Hativa (1995) refers back to Biglan's classification of university academic fields, and states that a variety of studies have validated this classification, and that other studies have used it to explore disciplinary differences in teaching and learning. Hativa (1997) itemised professors' concepts of the goals of undergraduate instruction in their department. She was able to divide the disciplines into the Humanities - Social Sciences group and the Mathematics - Natural Sciences and Engineering group, based on her results, resonating with Biglan's classification into the "soft" versus the "hard" groupings, providing further support for Biglan's work.

Smeby (1996) analysed aspects of teaching and preparation time, time spent on various types of instruction, including a comparison within various teaching levels. The author attributes the differences in the findings between fields of learning to the work done by Biglan and the results underscore the impact of the field being placed in one of the quadrants.

Other authors challenge the view that Biglan's classification can be used to explain different phenomena found in educational practice. The work of Cashin and Downey (1995) springs from reports of reviews on students' ratings of teaching, and results that reveal differences in ratings based on the discipline being evaluated. These authors used Biglan's clusters to establish different fields that could be evaluated. There is an interplay between what Faculty rates as important characteristics within academic fields and students' perceptions of what is learned. These authors found differences between academic disciplines in the course objectives emphasised, but that these do not seem to be systematically related to Biglan's clusters of disciplines. They offer support for the belief that different disciplines receive different ratings because they have different course objectives that require differing teaching methods – and students will, logically, respond well to teaching methods that are appropriate for learning those objectives. They conclude by saying that Biglan's clusters are not the explanation.

2.3 Knowledge and the Knower

This portion of the literature review considers the relationships between the Knower (both the undergraduate student and the Specialist in a field) and the body of knowledge, and the impact of the classification system on curriculum design.

2.3.1 The implications of Biglan's classification system in established curricula

Marincovich (1995) explains that he builds on the pioneering studies of Biglan in the 1970's and the more recent work of Shulman, in the 1980's, on knowledge and teaching, and explains how an examination of the role of disciplinary differences is based on the organisation of knowledge, the beliefs, attitudes, and perceptions of Faculty, and the attitudes, strategies, and perceptions of students.

Schommer-Aikins, Duell and Barker (2003) describe the methodology by which Biglan constructed the classifications of academic fields, based on the quadrants. These authors found that undergraduate students have epistemological beliefs that are moderately domain general. They conclude that students who are dealing with "ill-structured domains (e.g. Social Sciences) will struggle in learning when using strategies and epistemological beliefs that apply only to well-structured domains (e.g. Mathematics)" (page 360/361).

2.3.2 The impact of the classification system on curriculum design

Lattuca and Stark (1994) reviewed several of the definitive studies about the way disciplines structure knowledge, faculty behaviours and attitudes related to course planning, and the cognitive and social patterns that distinguish academicians (*sic*) in different fields. The authors conclude that the advocates of curricular reform should focus on how each discipline can help students develop those attributes which are most readily fostered by that discipline.

2.3.3 The emergence of the Knower in Medical Education.

Two authors have called for an end to the Cartesian mind-body split. Burger (2001) states that thinking in Medicine is still traditional in its approach, namely dividing individuals into the reasoning mind and an objective body as part of all non-subjective things of the world. He feels that this classical Medical paradigm does not take into account the influence of the observer on the observed phenomenon, and calls for a broader understanding of complex illnesses and their psychosocial implications, emphasising that the delivery of a revised Medical Education must be based on reflection on the underlying concepts and the relation of the human to his/her world. He prioritises the ability to recognise different realities, a skill that, hopefully, emerges via the delivery of a problem-based learning curriculum, of acknowledging and reflecting on the status of the observer, and of being flexibility in thinking without infringing on the validity of the respective knowledge.

Kneebone's article (2002) resonates with Burger (2001) in his personal view of the relationship between Science and Humanities within Medical Education, and argues for a more even balance between the two. He describes the traditional, historical approach to Medical Education as being dominated by a positivistic paradigm that assumes the existence of a single objective external reality, requiring students to grapple with a vast field of factual information. For Kneebone clinical practice takes place in a much less certain world, where reconciling different interpretations of truth is an everyday necessity, requiring the integration of intellect, skills and emotion. His concerns are that orthodox Medical training provides a limited perspective and cuts students off from valuable sources of insight and understanding. He feels that Medical Education often fails to provide learners with the tools they need to interpret the literature of other disciplines, ignoring the importance of recognising different perspectives. The author quotes Greaves (2001) as distinguishing between the "Medical Arts" and the broader concept of "Medical Humanities" – whereby the Medical Arts counterbalance the Medical Sciences, and Medical Humanities place the human as the focal point of Medicine. He ends his article by pleading for a more inclusive approach to alternative paradigms within the educational system.

The author's key learning points are listed in the article as:

- Medical training emphasises a positivist, "scientific" approach to knowledge.
- Reading the Medical Humanities requires insight into differing world views.
- "Total internal reflection" describes an inability to see outside one's existing paradigm. (The reference here is to the Physics phenomenon whereby light is reflected from the surface of a liquid without penetrating it, thereby making it impossible for anyone within a pool of water to see outside of it.)

- Medical students and doctors must develop the skills needed to interpret the Humanities literature.

These scholars are arguing for an increased foregrounding of the Knower in Medical Education. The next step would be to look at the "new" relationship between Knowledge and the Knower. There is limited scholarship on the changing relationships between these two in Medical Education. Furthermore, in general, educationists are advocating integrated curricula, but the implications of this change have not been extensively investigated. The present study will contribute towards filling both of these gaps.

Chapter 3: Theoretical Construct

3.1 Conceptualising the curriculum

As explained in the Introduction, Bernstein (1975) defines a curriculum as "the principle by which certain periods of time and their contents are brought into a special relationship with each other" (p. 79). The boundaries around these contents can be strongly bounded or blurred but, overall, the curriculum is "what counts as valid knowledge" (p. 85). Bernstein's pedagogic device (discussed in more detail later) provides a model for how knowledge is recontextualised into a curriculum, *id est*, how certain types of knowledge are privileged and arranged in relation to each other (Bernstein, 1975).

Bernstein (1975) compares curricula of a *collection type* ("closed"), in which specialised education is delivered in a way that is organised around subjects which are in closed relation to each other, which may result in border disputes, and curricula of an *integrated type*, delivered in a fashion that allows subjects to have an "open" relation to one another, by sharing a common integrated idea. In order for an integrated type of curriculum to be successful, Bernstein argues that it would need to meet the following criteria, all of which can be seen as advantageous:

- some consensus about the integrated idea
- a very explicit idea
- the linkage between the idea and the several contents systematically and coherently worked out
- a committee of staff and students set up in order to develop sensitive control of the whole endeavour
- very clear criteria of evaluation.

Each of these items will be addressed in the data gathering and analysis, and in the final conclusions.

Bernstein (1975) uses the concepts of *classification* and *framing* to define the design and delivery of curricula. *Classification* examines relations between categories which may be agencies, agents, discourses, or parties. Each category requires a space in which to develop its unique identity, internal rules, and special voice, and this space is surrounded by boundaries. What Bernstein considers crucial space is not that within the boundaries, but rather the space between one discourse and another, since it is the degree of insulation between categories that is crucial to specialisation. Whatever maintains the strength (the lack of permeability) of the insulation will maintain the relations between the categories and their distinct voices, and if that strength changes, then so do the principles of the social division of labour, and therefore the classification. Attempts to change the degrees of insulation reveal the power relations on

which the classification is based. Strong classification is characterised by contents that are well insulated by strong boundaries; weak classification has reduced insulation, because the boundaries between contents are weak or blurred. He uses the concept of *framing* to determine the structure of the message system – the pedagogy – the form of the context in which knowledge is transmitted and received. Framing therefore refers to the degree of control teacher and pupil possess over the selection, organisation, pacing and timing of the knowledge transmitted and received in the pedagogical relationship. Framing can also refer to the relative control held by individuals within a group of educators, as well as the degree of control by outside individuals and groups.

What are the effects of strong or weak classification and framing? According to Bernstein (1975), the classificatory principle creates order; contradictions, cleavages and dilemmas are suppressed by the insulation. The degree of creation or reduction of order applies to the regulatory processes between individuals (external relations) and within the individual (internal relations). A weakening insulation between categories may be seen as a threat to the distinct voices within. Strong classification is evident in a Collection type of curriculum, where there is increased discretion of teachers, within the limits of the existing classification and frames, paralleled by a reduced discretion of the learners. With de-classification or markedly reduced classification in an Integrated type of curriculum, there is reduced discretion of teachers in direct relation to the strength of the code, paralleled by an increased discretion of the learners. This marks a shift in the balance of power - in the pedagogical relationship between the teacher and those who are being taught - as well as between various educators involved in a curriculum. *Acting* and *being* (see references to Barnett and Coate, 2005, below) are affected by framing, with "+F" units showing a high degree of teacher control, and are authoritative, as opposed to "-F" units that legitimise learners' knowledge. The issue of the relative strengths of classification and framing will be part of the analysis of the data gathered for the current research project.

3.2 The Pedagogic Device

Bernstein (1999, 2000) uses the Language Device, namely a system of formal rules which govern various combinations that educators make when speaking and writing, as an analogy in order to develop his concept of the Pedagogic Device, which is a carrier, a relay for ideological messages and for external power relations, or, in contrast, an apparent neutral carrier or relay of skills of various kinds. Bernstein characterised three fields: the field of knowledge production, the field of recontextualisation, and the field of reproduction. The distributive rules are affected by who transmits what body of information to whom and how, acknowledging the fact that there are several external influences that affect this transmission. In answering the question of how we decide what body of knowledge and which system of delivery of the content are appropriate, he explains that the Pedagogic Device is the sum of Instructional Discourse

(content and skills) and the Regulative Discourse (moral and social order – "hidden" criteria). In this research project, I will be exploring how Specialists decide what is appropriate for their specialisms as background to discovering how they recontextualise knowledge from their fields of specialisation to their particular subject within the Medical curriculum.

Bernstein attempts to develop a sociology for the transmission of knowledge (see Luckett and McEwen, 2008), exploring two important concepts of *power* and *control*. Power operates on legitimate relations between categories. Power relations create, legitimise and reproduce boundaries between different categories of groups, gender, and race, different categories of discourse, and different categories of agents. On the other hand, control establishes legitimate forms of communication appropriate to the different categories, carrying the boundary relations of power and socialising individuals into these relationships. Thus control constructs relations within given forms of interaction, and carries both the power of reproduction and the potential for its change.

By applying the ideas of the translation of power and control relations, Bernstein (1999, 2000) expands on his concepts of classification and framing. As explained above, *classification* refers to the relations between categories, and if the insulation between categories is broken, then a category is in danger of losing its special identity. What preserves the insulation is power. With the shift in the Medical curriculum at UCT from a Collection type to an intended Integrated type, as set out in the Introduction, the effect would be to change the classification of subjects to ensure more permeable boundaries between categories - agencies, agents, discourses, or parties - which would affect power issues within these categories. *Framing*, as explained, is about who controls what, and determines the internal logic of pedagogic practice: the selection of the communication, sequencing, pacing, criteria, and control over the social base which makes this transmission possible. Bernstein (1999, 2000) explains that the degree of framing may be determined by establishing the ratio between Instructional Discourse (the rules of the discursive order) and the Regulative Discourse (the rules of social order). Again, with the changing philosophy of the Medical curriculum, framing (where the seat of control lies) may also change, and if it shifts increasingly to the student, then the matter of the personal attributes and qualities of the student needs to be added to the equation – the Knower – and how this impacts on the delivery of the programme.

In his flow diagram, Bernstein (1999, 2000) demonstrates a Collection Code type of organisational structure having strong classification and strong frames, as opposed to an Integrated Code type of organisational structure as having weak classification and weak frames. The relations between classification and framing determine the pedagogic codes, and thus the rules of pedagogic transmission and acquisition. Bernstein (1999) writes of how knowledge, competencies and literacies are acquired by the individual, emphasises the importance of the context of the discourse, and states that the discourse is

"directed towards specific, immediate goals" that are "highly relevant to the acquirer in the context of his/her life" (p. 161). He describes the process by which the individual recognises what is relevant for him or her to acquire, which are the rules of recognition. He argues that changes in the strength of classification change the recognition rules by means of which individuals are able to recognise the speciality of their context. A weakly classified context can create ambiguity in contextual recognitions. Codes may also be examined with respect to change, by asking questions such as, which group is responsible for initiating the change? (a dominant group or a dominated group), and, if the values are weakening, what values still remain strong? Bernstein reiterates that his model shows how both order and change are inherent in the pedagogic codes. All of these issues will be explored in this research project during the course of the interviews with the staff members who are involved in the design and delivery of the Medical curriculum at UCT.

3.3 Epistemic Device

Bernstein's Pedagogic Device models the process of the relay of knowledge from the field of production to recontextualisation to reproduction. Maton elaborates on this model by theorizing the underlying principles by which knowledge is generated, in order to develop his theory of the "language of legitimation" (Maton and Muller, 2006). Moore and Maton (2001) address what produces these structures of knowledge, in other words their underlying generative principles. By analysing the ways in which Knowledge structures are produced, they address the defining object of inquiry, and refer to this as the Epistemic Device. The Epistemic Device regulates how knowledge comes to be viewed as legitimate on the basis of external relations of power ("relations to", arbitrary knowledge) or by principles intrinsic to knowledge itself ("relations within", non-arbitrary knowledge). These two sociologies of knowledge operate under different principles of, and through different modes of, production.

3.3.1 Legitimation of knowledge

Maton elaborates on the theories of Bernstein, and develops the legitimation codes and the language of legitimation. The concept of "legitimation" is that which is valued in the field under discussion. The starting point for this discussion is the fact that every educational and intellectual field comprises a formation of Knowledge and a formation of Knowers (Maton, 2009a,b).

Moore and Maton (2001) expand on the range of perspectives between people involved in intellectual fields by introducing the concepts of Specialists having non-competing or competing paradigms, the former enabling feelings of inclusiveness, the latter leading to the concept of "difference". Specialities characterised by competing paradigms may be seen as a field of exclusively specialised Knowers, each speaking in its own distinctive and incommensurable language or voice. The principles of legitimation

differ between the two groups. The concept of arbitrary and non-arbitrary knowledge in the legitimation process defines the Epistemic Relation (ER) and Social Relation (SR) of knowledge. Moore and Maton explain that claims to knowledge are made by authors within both socio-historical and worldly contexts – claims by somebody about something. The Epistemic Relation is between knowledge and that part of the world of which knowledge is claimed (the object of study) and the Social Relation is between knowledge and its author (the subject making the claim to knowledge). The strength of the classification (boundaries around) and framing (control over) the languages of legitimation determine the "what" and the "how" of the knowledge (Epistemic Relation) and "who" may claim knowledge (Social Relation). Moore and Maton refer to the process of specialisation of that knowledge within a field as either a Knowledge Mode (for ER) or a Knower Mode (for SR).

The Knowledge Mode may be represented as:

object ⇨ language ⇨ Knower, functioning by procedures

The Knower Mode may be represented as:

Knower ⇨ language ⇨ object, functioning by "gaze"

Participants in each of these two fields will aim to control the Epistemic Device, which controls the status of hierarchies within a field, and establishes both the particular modalities of legitimation and the structuring of the relations within the constituent elements. These two authors make use of the term "gaze" (above), which may be found in Bernstein's 1999 article. In this article, Bernstein writes that particularly in the acquisition and transmission of horizontal knowledge structures, a perspective is required, that is a particular way of recognising and realising what counts as relevant in an intellectual field. The acquirer of this perspective develops skills such as how he or she reads, evaluates and creates texts. This quality he describes as a "gaze" that needs to be acquired, and adds that to know is to "gaze". In his footnote (p. 171) relating to the use of this term, he explains that the word was first introduced by Foucault in 1976, where it refers to "medical gaze" and transforms the body into a positivist object, and other authors have subsequently also referred to the term. Bernstein emphasises that "gaze" is the motivator and shaper of the recontextualising process, and that the context in which he uses this term is with respect to the acquirer and not to the discourse to be acquired (Bernstein, 1999).

Maton (2007) states that for every Knowledge structure there is a Knower structure. He makes the point that most approaches to the sociology of knowledge and education focus on relations to knowledge (and quotes examples of relations to class, race, gender, and so forth), but Bernstein pays attention to relations within knowledge, thus resulting in the specialisation of identity, consciousness and relations.

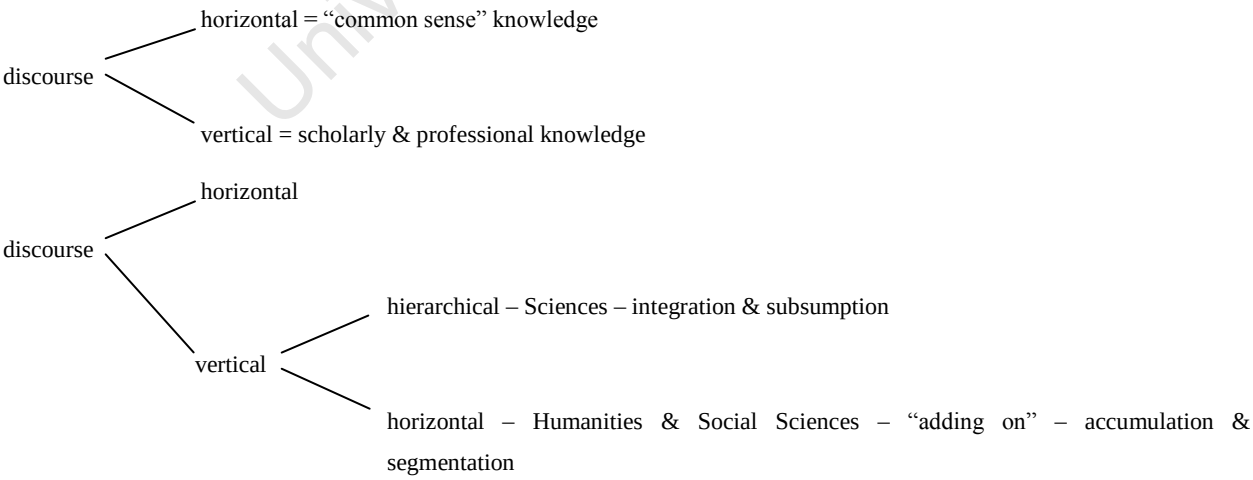
Maton describes a trajectory that can be traced through the writings of Bernstein:

- the analysis of the pedagogic practices of educational fields of reproduction (1977),
- an account of the construction of educational knowledge (1990), and
- the intellectual fields of production from which this knowledge is selected and recontextualised (1999).

Maton maintains that legitimation codes provide a means of conceptualising the structuring principles underlying intellectual fields, and the Epistemic Device is the means whereby these codes are created, maintained, reproduced, transformed and changed.

In 1999, an essay by Bernstein was published in which he examined what he refers to as vertical and horizontal discourse. The essay arose from his opinion that these forms of discourse were historically constructed by factors that were taken for granted and were not analysed – namely the internal principles of their construction base and their social base. He defines horizontal discourse as common sense knowledge that is segmentally organised (through realisation) where segments may have unequal importance. This description also highlights the "gaze" of the acquirer of knowledge. On the other hand, vertical discourse, which is scholarly and professional knowledge, takes the form of a coherent, explicit and systematically principled structure, usually hierarchically arranged when it comes to the Sciences and horizontally arranged for the Humanities. Vertical discourse takes the form of a series of specialised languages and is characterised by strong distributive rules that regulate access, transmission, and assessment.

As a summary of this structure, the following depictions may be useful:



Maton (2009a,b) develops Bernstein's theories (above) of Knowledge structure by introducing the Knower structure, and therefore there is both a horizontal and vertical Knowledge structure and Knower structure to explore.

The horizontal Knowledge structure comprises a series of segmented, strongly bounded languages, either with strong or weak grammars. The concept of "grammar" is the ability of the conceptual language used in a Knowledge structure to generate unambiguous referents (Maton, 2009a,b). This can be visually represented as:

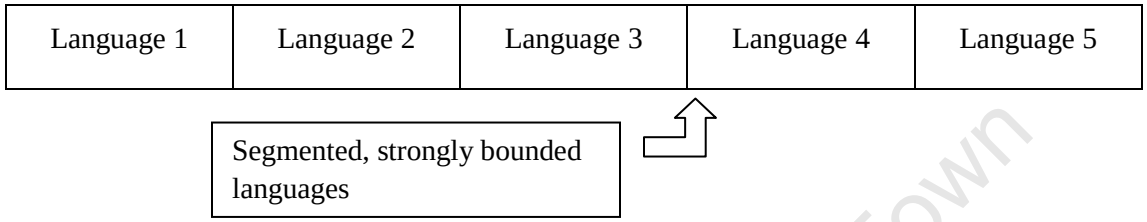


Figure 5: Horizontal Knowledge structure

The hierarchical Knowledge structure is systematically principled, develops through the integration of knowledge at lower levels and across expanding phenomena, and is pyramidal in shape. This can be visually represented as:

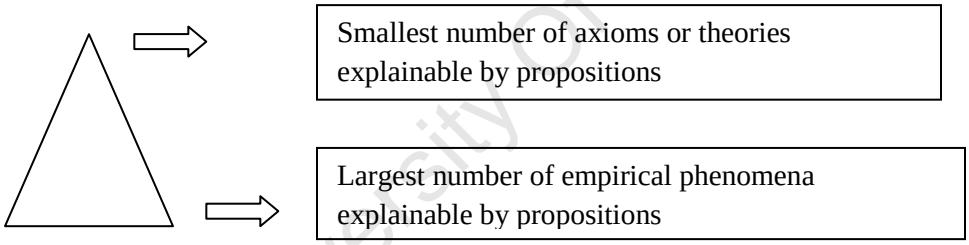


Figure 6: Hierarchical Knowledge structure

In addition, Knower structures may also be grouped as hierarchical or horizontal. The pyramidal hierarchical Knower structure places the ideal Knower at its pinnacle (based on an image of the ideal Knower). This can be visually represented as:

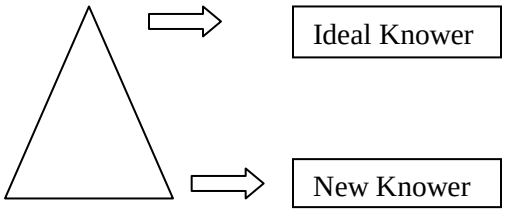


Figure 7: Hierarchical Knower structure

The horizontal Knower structure comprises a sequentially arranged series of strongly bounded Knowers, each with their own specialised modes of being and acting. This can be visually represented as:

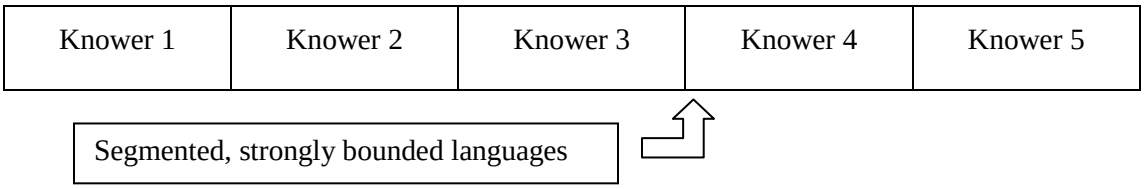


Figure 8: Horizontal Knower structure

Based on the earlier writings of authors debating the Science / Humanities "divide", Maton's ideas can be represented as:

	Humanistic culture	Scientific culture
Knowledge structures	Horizontal	Hierarchical
Knower structures	Hierarchical	Horizontal

Table 2: The Science / Humanities "divide".

Maton (2009a) explains how Science can be characterised as possessing a hierarchical Knowledge structure and a horizontal Knower structure, a series of strongly bounded Knowers, each with specialised modes of being and acting, with non-comparable habituses or embodied dispositions based on different social trajectories and experiences. The social profile of scientists is often held to be irrelevant for scientific insight, anyone can ostensibly claim legitimate knowledge so long as they follow scientific procedures. In terms of their non-scientific dispositions, "scientists can represent a segmented series of Knowers strongly bounded in terms of their non-scientific gaze" (Maton, 2009a, page 5). In contrast, Maton states that the Humanities can be characterised as possessing a horizontal Knowledge structure and a hierarchical Knower structure. This means "a systematically principled and hierarchical organisation of Knowers" (Maton, 2009a, page 5), based on the construction of an ideal Knower (there may be more than one ideal Knower). The structure develops "through the integration of new Knowers at lower levels and across an expanding range of different dispositions" (Maton, 2009a, page 5). The position and trajectory of Knowers within the field's hierarchies are arranged in relation to the ideal Knower – the triangle of Knowers (and there may be more than one triangle of Knowers). The author makes the point that the

difference between the two intellectual fields (Science and Humanities) may lie less in whether they are hierarchical or not, but rather in where their hierarchising lies.

Referring back to the legitimising codes of specialisation, Maton (2007) analytically distinguishes between:

- an Epistemic Relation (ER) to the Knowledge structure, and
- a Social Relation (SR) to the Knower structure.

According to Moore and Maton (2001), the ER and SR refer to "two analytically distinctive but empirically interrelated dimensions of knowledge and practice within intellectual fields of production" (page 165). They state that knowledge claims are *by someone* and *about something*. They define the ER as the relation between knowledge and that part of the world (the object of study) of which knowledge is claimed. The SR is the relation between knowledge and the author or observer, in other words the subject making claim to the knowledge. Both the ER and the SR may be described as either "strong" (+) or "weak" (-). Each of these may exhibit relatively strong or weak classification (C) and framing (F). Classification refers to the strength of the insulation between categories, and framing represents the control exercised over *what* knowledge may be claimed and *how* (Epistemic Relation) and *who* may claim knowledge (Social Relation) within each category.

This can be represented diagrammatically as:

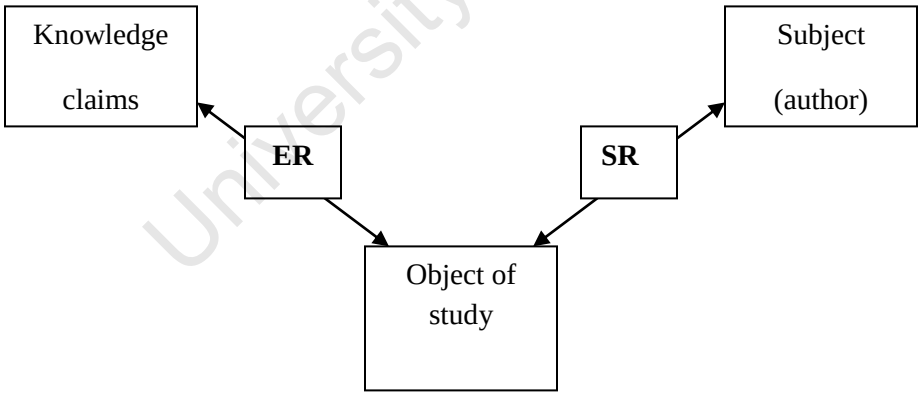


Figure 9: The Epistemic Relation (ER) and Social Relation (SR).

If knowledge and correct procedural skills are explicitly emphasised, then the Epistemic Relation may be described as ER+. When the Knowledge structure and methods used in the study of the object are loosely bound, the Epistemic Relation may be described as ER-. If the unique insight of the subject of the study (the person) is important, relating to the social development of the individual, her dispositions and attitudes, the Social Relation is described as SR+. When there are weak boundaries and there is weak

control around the subject of the study, or when the attributes and insight of the Knower are "irrelevant", the classification of the Social Relation is SR-.

In the paper by Lamont and Maton (2007), the authors argue that determining factors of success and achievement in a career in music are possessing Specialist knowledge and being the right kind of Knower (attitude). The authors explain that the ruler of achievement for the knowledge code is what you know, and that for the Knower code is what kind of Knower you are.

The following table highlights the differences between the legitimation codes of specialisation:

		Social Relation (to subject)	Social Relation (to subject)
		weaker (SR-)	stronger (SR+)
Epistemic Relation (to object)	stronger (ER+)	Knowledge code	Élite code
Epistemic Relation (to object)	weaker (ER-)	Relativist code	Knower code

Table 3: Legitimation codes of specialisation.

The Humanistic / Scientific table can be expanded as follows:

	Humanistic culture	Scientific culture
Epistemic Relation	-C, -F (= ER-)	+C, +F (= ER+)
Social Relation	+C, +F (= SR+)	-C, -F (= SR-)
Legitimation code	Knower code ER-, SR+	Knowledge code ER+, SR-

Table 4: Legitimation codes of Humanities and Science cultures.

In drawing up his final version of the four legitimation codes, Maton characterises these as according to what is valued:

- a Knowledge Code (ER+, SR-), where the possession of knowledge (such as procedures, skills and techniques) is emphasised as the basis of specialisation,

- a Knower Code (ER-, SR+), where the dispositions of Knowers are emphasised (innate, natural, notions of genius, inculcated, artistic or literary sensibility cultivated through prolonged immersion in great works, socialised, standpoint theory - based on class, race, gender, sexuality, religion, age, and so forth),
- a Relativist Code (ER-, SR-), where identity and insight are determined neither by knowledge nor disposition, and
- an Élite Code (ER+, SR+), where legitimacy is based on possessing specialised knowledge and on being the right kind of Knower.

[Maton writes in a footnote that the language of description can be expanded in order to provide theorisation that is more subtle when it comes to the consideration of the differing strengths of classification and framing. The result is a total of 16 possible modalities, based on ER+/-(+/-C, +/-F) and SR+/-(+/-C, +/-F). Yet he prefers to limit his discussions to situations where classification and framing strengths are both stronger or weaker, as he explains that these are the most commonly encountered orientations, according to Bernstein.]

Maton (2009a) further describes a stronger relation ("+") as indicating a hierarchical structure. This means that a weaker relation ("-") should indicate a horizontal structure. Maton argues that Science, with its hierarchical Knowledge structure (ER+) and horizontal Knower structure (SR-), can be designated as a Knowledge code. Humanities embody a horizontal Knowledge structure (ER-) and a hierarchical Knower structure (SR+), placing it as a Knower code. An Élite code will have both knowledge and Knower structures hierarchical (ER+, SR+), and a Relativist code will have both structures horizontal (ER-, SR-).

Lamont and Maton (2008) on *http://www.KarlMaton.com* develop the theory that focuses on the basis of achievement or success within educational contexts. These 'languages of legitimation' are analysed in terms of their underlying structuring principles or 'legitimation codes'. One dimension of the code which the authors deal with is 'specialisation' or what makes someone or something different, special and worthy of distinction. The legitimation codes describe what Bourdieu (cited by the authors) terms the 'rules of the game' – the dominant basis of success in any particular social context.

Regarding the Knower, one can summarise these "rules of the game" as follows:

- a Knowledge Code, where the disposition of the Knower is downplayed; *what* you know is valued (examples of this from the MBChB curriculum may be Physics, Medical Biochemistry and Anatomical Pathology),

- a Knower Code, where the disposition of the subject (Knower) is emphasised as the measure of achievement; *who* you are is valued (an example of this from the MBChB curriculum may be a subject that requires the student to counsel patients, as in Family Medicine),
- an Élite Code, where both Knowledge and the Knower are valued, albeit that one of them may dominate (an example may be the Medical degree as a whole), and
- a Relativist Code, where neither Knowledge nor the Knower are determinants of achievement (when students are immersed in a "true" PBL curriculum, where they expected to take complete control of their learning, with Faculty providing only a limited role in guiding and facilitating their learning, this is what the students may feel [Maton, 2009, personal communication]).

Maton and Moore (2007) further analyse the four legitimation codes by detailing the relative strengths and weaknesses of classification and framing within each of the codes. They focus mainly on the Knowledge Code and the Knower Code in their analysis. The relative strength of the classification is determined by the degree to which knowledge claims about the object of study differ from those of other objects, and the degree of difference between knowledge claims about the object by a variety of intellectual fields. The degree of personal discretion in the choice of objects of study, procedures and criteria will determine the relative strength of the framing, *id est*, the degree of equal positioning of all observers, or the degree to which a voice (truth) is given to this experiential knowledge.

To this end, Maton and Moore (2007) construct the following table:

	Epistemic Relation	Social Relation
Knowledge code	+C, +F	-C, -F
Knower code	-C, -F	+C, +F

Table 5: Classification and framing in legitimation codes.

The authors then condense each cell to read ER+ for ER(+C, +F) and SR- for SR(-C, -F), and thereafter analyse both the Knowledge and Knower codes:

- a Knowledge Code can be described as ER+, indicated by ER(+C, +F), and SR-, indicated by SR(-C, -F), and
- a Knower Code can be described as ER-, indicated by ER(-C, -F), and SR+, indicated by SR(+C, +F).

3.3.2 Summary

In summary, the language of legitimation may be conceptualised by a combination of the following:

- the strength of the boundaries around a field (Bernstein's classification or "C")
- the degree of control within a field (Bernstein's framing or "F")
- the "what" and "how" of the knowledge claims (Epistemic Relation, ER)
- the "who" of the subject (author) (Social Relation, SR).

Based on Maton (2009a), I constructed the following table of Knowledge-Knower structures and legitimation codes for the current research project:

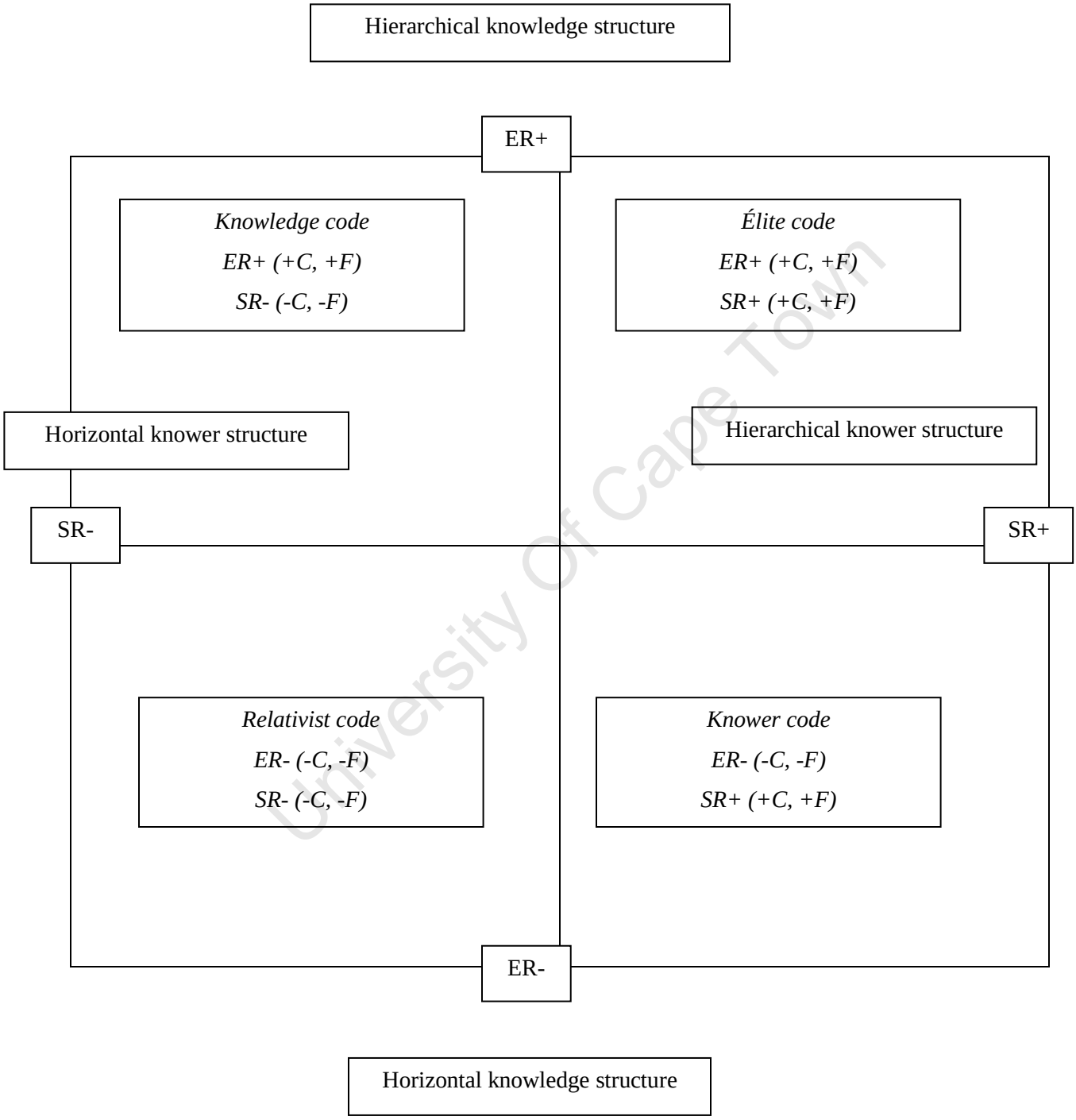


Figure 10: Details for the four codes of legitimation.

Based on the model described above, I will investigate two subjects within the MBChB curriculum, based on a bio-psychosocial model. When it comes to the overall delivery of a curriculum such as this, the intention is to encourage full vertical and horizontal integration of knowledge, and a well structured "spiral of learning". The aim would be to have permeable barriers between subjects and courses, and to share the control of learning between students and staff. If the intended curriculum is that of a bio-psychosocial model, then the question can be raised as to whether each component of the curriculum – each discipline, subject and course – aims to address the relative permeability of the boundaries around all the fields of study, as well as the personal development of the undergraduate student over the six years of study. This is what I determined was worth investigating in my analysis of the curriculum, by finding a way of describing the forms of knowledge that are valued by two subjects positioned in different quadrants, as described by Biglan.

3.4 Epistemology and Ontology

In the literature there is a growing appreciation for the importance of the person (the concept of *being*, the Knower) in addition to the long-standing concerns about knowledge and "states of knowing". Authors whose recent work most ably addresses this idea are Barnett and Coate. In their 2005 article these authors suggest three domains which form the basis of discussions about curricula, namely *knowing, acting* and *being*. These three domains are used by them to provide a frame through which to understand and communicate different patterns of curricula across disciplines, courses and programmes, summarised as follows:

- *Knowing* – episteme – knowledge is active, dynamic and socially developed; requires a will to acquire and own; a personal act of engagement between the student and the intellectual field in question.
- *Acting* – praxis – becoming engaged in action and thus developing skills; becoming increasingly important in education; emancipates.
- *Being* – ontology or self-identification – the types of qualities listed are: self, being, becoming, capacity, self-realisation, self-confidence, self-understanding, self-reliance. (The concept of Being opens up discussions about selection criteria for students, and the recognition of the potential to develop certain traits that will result in the success of a professional.)

According to Barnett and Coate (2005) the initial, important component is the *knowing*, a personal act that requires a calling for will, an act of identity, and a claim for ownership. A knowing is a personal

relationship between the person and the intellectual field in question, requiring collective engagement between students. *Acting* emphasises skills that are appropriate for the profession, which requires that a student not only acts, but also engages. Initially, this action may be modelled on the actions of others positioned around a student, but eventually becomes unique to the student, authentic and first-hand. This is where a student acquires the skills of the profession to the highest degree. *Being* involves learning how to learn, and examples are journaling reflections on learning and assessing the value of activities. *Being* encompasses terms that relate to "self", "of being" and "of becoming". Similar terms are "capability", "self-realisation", "self-confidence", "self-understanding" and "self-reliance": the development of the inner self.

All three of these building blocks need to be used within the curriculum, and their development within students needs to be taken seriously by educators. The scheme that Barnett and Coate (2005) use is illustrated by three interlocking circles representing *knowing*, *acting* and *being*, with the curriculum lying centrally.

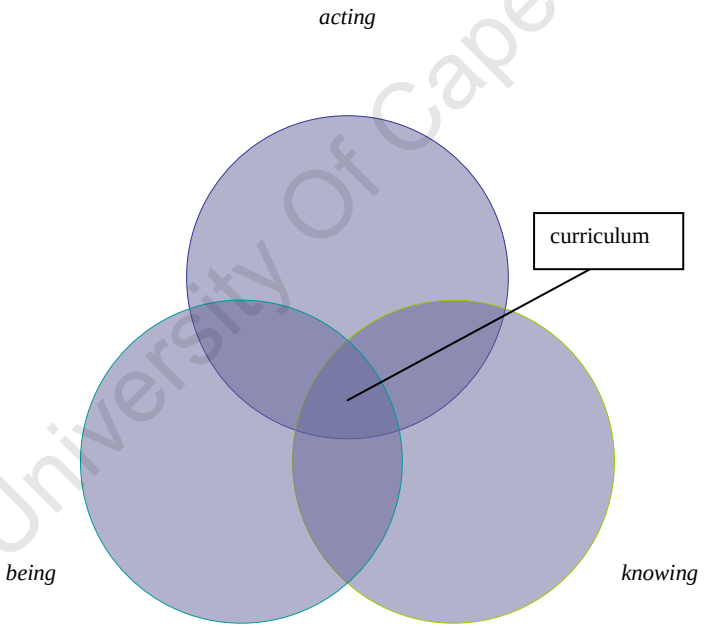


Figure 11: The interlocking circles of *knowing*, *acting* and *being*

The point is to identify whether *knowing*, *acting* and *being* overlap and the degree to which they overlap. The curriculum lies centrally, with contributions from each of the three circles, and the amount of overlap is relevant. Furthermore, and of greater relevance to this research project, the relative sizes of each of the circles vary according to which is the more dominant component of that curriculum. Barnett and Coate (2005) use this scheme to illustrate curricula in Arts and Humanities, in Sciences and Technologies, and in professional subjects:

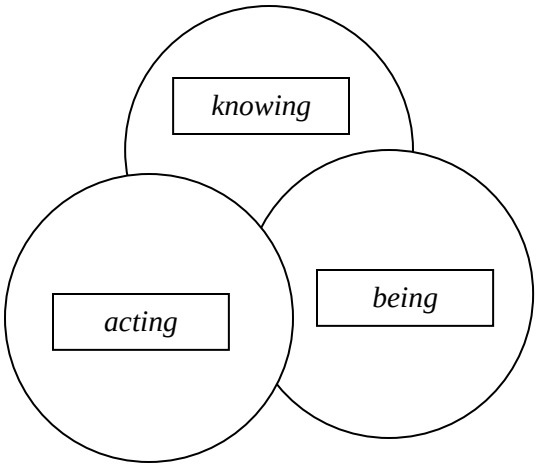


Figure 12: The order of size of circles, from large to small, by Barnett and Coate, 2005.

Arts & Humanities:
knowing > *being* > *acting*
Science & Technology:
knowing > *acting* > *being*
Professional subjects:
acting > *knowing* = *being*

I will be using Barnett and Coate's tool in the course of this research project as a method of establishing how Specialists view their field of specialisation and the subject they teach in the undergraduate curriculum.

Dall'Alba and Barnacle (2007) argue that in conventional approaches to teaching and learning in higher education programmes ontology tended to be subordinate to epistemological concerns. The main focus of such programmes will be the transfer and acquisition of knowledge and skills, both generic and discipline-specific. In recent times, educators are challenging the *status quo* of such programmes, and are asking about who the learner becomes: an integration of *knowing*, *acting* and *being*. These authors state that epistemology and ontology are inseparable. Knowing transforms, changes who we are. One can thus argue that there has been a shift in focus from epistemology in itself to epistemology in the service of ontology. One example is Medical students, where learning to know sicknesses and symptoms would contribute to the development of appropriate ways of acting towards and interacting with patients, their family, friends and colleagues, and relevant authorities in a manner that promotes improved health for patients. *Knowing*, *acting* and *being* will be focal points in the current research project during the analysis of the data gathered.

Chapter 4: Methodology

4.1 Research question

This investigation is into the concepts of differentiated forms of knowledge that inform the Medical (MBChB) curriculum of the University of Cape Town (UCT).

The research project aims to characterise the nature of the different forms of knowledge in two disciplines that leads to the construction of the MBChB curriculum. The term "educational knowledge" is used to identify knowledge that is recontextualised into the Medical curriculum as part of the undergraduate MBChB programme. In addition, the term "disciplinary knowledge" identifies knowledge that makes up the disciplines which are represented by the various subjects taught in the courses that form the complete undergraduate MBChB programme.

The object of this research project is to classify, describe and compare the forms of knowledge present in two selected subject areas, each made up of specific specialities (disciplines), within the same course in Years 2 and 3 of the MBChB programme.

4.2 Position of the researcher

I am an academic staff member in the Department of Human Biology, and am involved in the delivery of learning material in the Basic Sciences. I have been a PBL small group facilitator in various semesters. I was part of the group of staff members guiding the change from the previous traditional curriculum to the current model. I co-chair the Committee that oversees the first three years of the programme, including the Intervention Programme which provides additional academic support. My involvement has provided me with detailed insight into the structure and content of all the courses offered during Years 2 and 3 of this programme. The advantage of my position is that I have a deep understanding of the processes that Faculty went through in the design and delivery of the curriculum, and have worked with the relevant staff members for a considerable period of time. The role I have been playing in that context is an advocacy role, working in support of the development and execution of portions of the MBChB programme. This function needs to be separated from my role as researcher in this instance, which requires that I adopt a more objective and critical stance in order to investigate the research questions posed. It is hoped that the findings of this research project will provide me with valuable insights into the planning, delivery and review of this programme.

4.3 Grounding in earlier research projects

My methodological approach has been informed by Donald (1983), who points out that most of the research done to date has focused on teaching procedures as opposed to course content. She states that teaching and learning in higher education consist of complex analytical and synthetic processes that create concepts and relate them to one another, and it is these concepts and their relationships that create a Knowledge structure that can be studied. Her research was into the structure of knowledge of courses, and she chose a group of courses in the Natural Sciences, in Pure and Applied Social Science, and in Humanities, for a comparative analysis. Her methodology was a detailed examination of all course material, followed by a series of interviews with the appropriate professor to analyse the following features: relevant course concepts, key concepts, modes of representation and degree of abstraction, concept inclusiveness and salience, concept relationship tree structure, and the kinds of relationships. Donald completes her article by pointing out the importance of identifying these relationships for Faculty, as they determine such factors as how to improve a course, develop a curriculum, alleviate learning difficulties, and judge student achievement.

4.4 Sources of data

The following items were used in order to provide data for the analyses:

1. Course documentation:
    - UCT Graduate Profile, Faculty of Health Sciences (see Appendix 1)
    - Special Faculty Assembly, Primary Health Care principles (see Appendix 2)
    - Faculty "core content & skills" document (see description in the Introduction, Chapter 1 and Appendices 4 and 5)
    - Learning outcomes for Problem Based Learning cases, based on documentation by appropriate members of the Design Team (see Appendices 4 and 5). These include the learning outcomes (LO's) for each case, as well as all course material that needs to be covered during the fortnight spent on each PBL case.
2. Interviews with staff, with questions which were first refined by the use of a pilot study (for the pilot study, see Appendix 3): two staff members for the subject Culture, Psyche and Illness (CPI) (one from each of the disciplines of Medical Anthropology and Psychiatry), and two staff members representing the subject of Chemical Pathology (specialists in that discipline) were interviewed. A first set of interviews generated data on the field of speciality, namely the

Specialist and the discipline, and a second interview was used to gather data about the undergraduate Medical curriculum.

3. Examples of assessments: discipline-specific questions that were extracted from class tests and final examination papers which were taken to the interviews with members of staff for discussion.

Regarding the course documentation, in order to generate a complete picture of all material to be studied for the two specific subjects in Years 2 and 3, both the Faculty "core content and skills" document and all the learning outcomes (LO's) generated from the 20 PBL paper cases required analysis for this research project. The entire body of knowledge that needs to be mastered by the undergraduate student is reflected in the Faculty "core content and skills" document; in other words this is a reflection of the full range (breadth) of knowledge required as a basis for academic success across the six years of the MBChB programme. Each subject delivered by staff members in a particular discipline is listed and the "core content and skills" for that discipline are itemised. This document divides the topics into "*must know*" and "*must recognise, manage and refer*", but does not provide the finer detail of the specific depth to which a student must progress in their study of each item. On the other hand, the LO's from the PBL cases give an indication of the depth required through the use of specific action words, such as *explain, describe, analyse, compare, contrast, understand, demonstrate, give an overview,* and so forth (see descriptions of Bloom's Taxonomy in the Literature Review, Chapter 2). The learning outcomes or learning objectives (LO's) from the various PBL paper cases are generated by students in their individual PBL groups, and are collated by the students into one list that is made available to the whole class on VULA (the local Intranet). This list of LO's is checked by the course convenor as to whether it closely matches the intended LO's of the Design Team.

Apart from the 20 PBL paper cases, with the unique "supported" PBL curriculum at UCT, a wide range of learning activities is used to provide various vehicles for student learning, such as whole class lectures, hands-on practical sessions, small group tutorials with specific tutors who represent individual disciplines, and computer-based tutorials. All of these learning activities may well address the LO's that emerge from the 20 PBL cases, but they also address additional topics that are not triggered. Therefore, a combination of the Faculty "core content and skills" document plus the LO's from the 20 PBL cases came to be what was analysed in this research project.

4.5 Research ethics

The following ethical issues arose:

1. Document of "core" material for MBChB programme: this is in the public domain at UCT and therefore does not require negotiation of access.

2. Assessment events: marking guidelines are made available on VULA (the Intranet).

3. Interviews with staff members: these required approval by the Humanities Ethics Committee, and informed consent. Revealing a staff member's thoughts and feelings about her/his discipline could possibly harm her/his reputation/status, harm the internal and external perceptions of the MBChB degree at UCT, and thus affect perceptions of the quality of the UCT MBChB graduate. There is a limitation to preventing possible harm since the two subjects and the disciplines involved have to be named in this research, and staff members involved in the design and delivery of these two subjects are to be interviewed; thus anonymity is the minimum that can be assured. Staff members who were interviewed were given access to the original research protocol to allow them to read this prior to the interview, to comment on the transcript of their interviews, and to read and comment on the findings of this study.

4.6 Research Design

The research project was designed by determining which subjects to investigate, which data to gather, and how to analyse the data.

4.6.1 Frameworks of classification of disciplinary knowledge

A set of categories was constructed in order to make sense of the data, and to identify whether there are different concepts at work in the types of knowledge. The literature review points to a number of frames for the classification of disciplinary knowledge. The analytical framework for this research drew on an adapted version of the following variety of frameworks, the details of which have been set out in the Theoretical Construct, Chapter 3:

- Biglan (1973a,b), Becher and Trowler (2001) and Neumann *et al.* (2002) for the placing of disciplines within the appropriate quadrants ("mapping"), using the Faculty "core content and skills" document.

- Bernstein (1975, 2000) for an interpretation of codes and disciplines, issues of power and control (framing), recontextualisation, and classification.

- Maton's model, used to draw up a table for the analysis of the Specialist, the discipline (speciality) and the subject studied by undergraduate students.

- Barnett and Coate (2005) for the development of their proposed curricular schemes of the positions and sizes of the three interlocking circles of disciplinary content (the "Knowing"), disciplinary skills and workplace experience (the "Acting"), and workplace awareness (the "Being"), which provides a small lens through which I can interrogate my data.

4.6.2 Choice of subjects for analysis

Using the interpretation of Biglan's quadrants (1973a,b), explained in detail by Neumann *et al.* (2002), the various subjects and disciplines offered within the MBChB programme for Years 1 to 6 were mapped out using the Faculty "core content and skills" document. In addition, any relevant departmental documentation was used, such as the descriptive entries in the current Faculty of Health Sciences Handbook for UCT. The relative positions of the disciplines relate to the emphasis on "hard" scientific facts and practical application, versus the relatively non-paradigmatic Humanities. This precursor to the later main analysis informed the decision regarding into which quadrant the subject or course would fit most comfortably. It is important to remember that both Biglan and Newman *et al.* write that the positions of disciplines and courses may change over time; in other words may move their positions within quadrants or between quadrants. As the psychosocial emphasis becomes increasingly evident in the bio-psychosocial / spiritual model of the MBChB programme, subjects may alter their position and may even straddle quadrants, but the approach here was to adopt a classical view of each subject. The intention was to identify two subjects that are clearly positioned in different quadrants, in order to make a comparison between these subjects.

Based on the above analysis, the two subjects that were eventually chosen were Chemical Pathology and "Culture, Psyche and Illness" (CPI), both indicated in bold in Fig. 13, the former subject comprising one discipline and the latter comprising several complementary disciplines. These two subjects form one part of the courses offered in the second and third years of the MBChB programme, namely Integrated Health Systems, and are delivered by various Specialists in their fields. The Specialists have mixed forms of appointments, being members of departments at UCT, and/or the para-statal National Health Laboratory Services (NHLS), and/or the Provincial Government of the Western Cape. They are responsible for the delivery of the educational knowledge relevant to their disciplines, thus contributing to recontextualisation of knowledge for the MBChB programme. These staff members are involved in teaching undergraduate and postgraduate students, delivering clinical services, and performing research in their chosen fields. The staff members from CPI and Chemical Pathology who were interviewed are involved in the design, teaching (delivery), review and assessments for those two subjects for the MBChB programme. These interviews with the staff were preceded by the use of a pilot study, which was aimed at refining the questions (for the pilot study, see Appendix 3). For the main investigative process, a first set of interviews generated the data about the field of speciality and the second was about the undergraduate Medical curriculum. The nature of the questions asked by staff members of these disciplines during

assessment events was used to reveal more of the nature of the educational knowledge and, possibly, to comment on the degree of alignment between what is taught and what is examined.

In addition to the fact that Chemical Pathology and "Culture, Psyche and Illness" are positioned in different quadrants when using Biglan's classification, there were other reasons for specifically selecting these two subjects. Firstly, Chemical Pathology staff involved in this subject area have had a history of being slow to accept the changes to the curriculum. I am hoping that an analysis of Knowledge structures within this subject may throw light on the reasons for this apparent resistance. Two staff members were interviewed to determine the degree of alignment between the data gathered from each of them. Secondly, CPI was initially planned and delivered by two staff members, a Psychiatrist and a Medical Anthropologist. This process has been characterised by a fair amount of contestation, and therefore both staff members were interviewed in order to establish the degree of agreement between them with respect to a variety of aspects of the course.

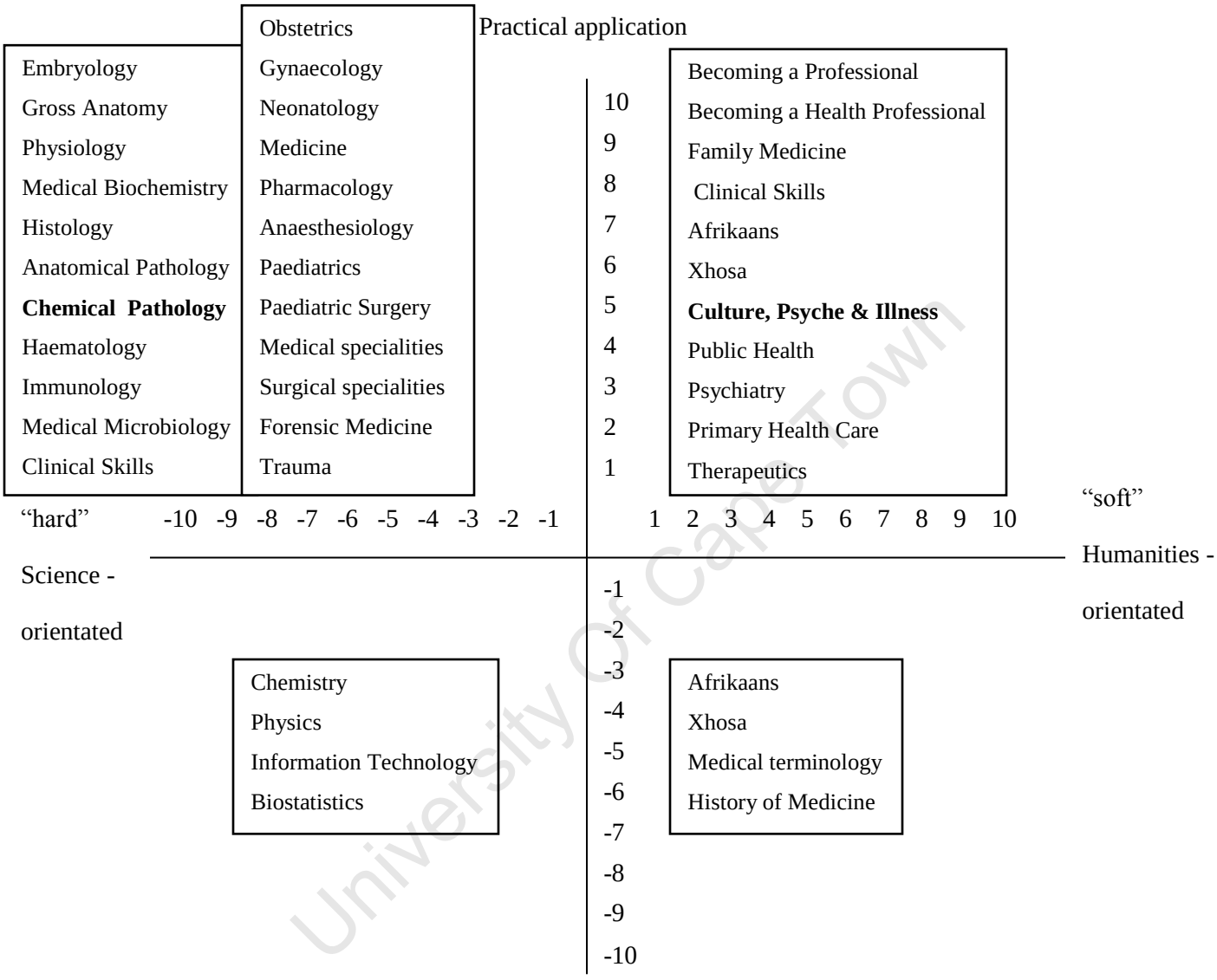


Figure 13: MBChB Programme – Years 1 to 6, University of Cape Town
(This construct is based on Biglan's work that was published in 1973.)

4.6.3 Analysis of data

The methods used to analyse the data are set out below.

Construction of template for entering data

In the analysis of the data, the sources may be grouped into two main categories:

- Faculty / Programme / Course documentation provided the data for the initial part of the analysis. The information that was generated is a reflection of the educational knowledge expected of a student in the undergraduate MBChB programme.
- Interviews with staff members provided another source of data for the analysis. The interviews covered three topics: a description of the qualities of a Specialist in that field, a description of the disciplinary knowledge relevant to that field, and a description of the educational knowledge relevant to that subject area within the MBChB programme. It should be emphasised that the views expressed by the Specialists who were interviewed may or may not reflect the views of their colleagues.

Based on the theoretical construct of Maton (see Theoretical Construct, Chapter 3), the following format was used in constructing a table in which the data could be sorted appropriately:

	Theoretical construct: Knower – Specialist; Knower – discipline; Knower - student	Operationalising the theoretical construct: Knower – Specialist; Knower – discipline; Knower – student	Examples from interviews (listed as colleagues) or course documentation			
			Colleague Chemical Pathology	Colleague Chemical Pathology	Colleague Psychiatry	Colleague Medical Anthrop.
ER+ (+C, +F)						
ER- (-C, -F)						
SR+ (+C, +F)						
SR- (-C, -F)						

ER = Epistemic Relation, SR = Social Relation

C = classification, F = framing

+ = strong, - = weak

Table 6: Template for entering data.

A list of words that reflected the types of knowledge and skills that are valued as a basis for achievement was compiled using the Faculty documentation. Based on standard frameworks of Taxonomy, these words were inserted into the appropriate blocks in Table 6. The same table was also used to categorise the words used by interviewees that indicate the types of knowledge that are valued as a basis for achievement. This list of words gives us an idea of how a student must study the topic, including the range of topics and the level (depth) of each topic. It reflects the nature of the input (disciplinary and

educational knowledge) of Chemical Pathology and Culture, Psyche and Illness into each of the medical conditions for the 20 PBL cases.

Various frameworks of Taxonomy have been published over time and are used in the design and implementation of the MBChB curriculum at UCT, encompassing the range and depth of knowledge that Faculty expects students to master over the six years of undergraduate study. "Action words" derived from these Taxonomies are used by students when they prepare the collated list of learning outcomes / objectives for each of the PBL cases, and by staff members when drawing up the various forms of assessment exercises. Krathwohl (2002) explains that the Taxonomy of Educational Objectives is a framework for classifying statements of what educators expect or intend students to learn as a result of instruction, conceived as a means of facilitating the exchange of test items among faculty of various institutions in order to create a bank of items, each measuring the same educational objective. He sets out the original Taxonomy based on the work by Bloom, but then proposes an expanded version. For the knowledge dimension, he proposes factual knowledge, conceptual knowledge, procedural knowledge, and metacognitive knowledge; for cognitive process dimension, he proposes remember, understand, apply, analyse, evaluate, and create. Krathwohl argues that a table using these categories should be completed to classify objectives, activities, and assessments in order to provide a clear, concise, visual representation of the particular course or unit. Once completed, the entries can be used to examine relative emphasis, curriculum alignment, and missed educational opportunities, which will assist with the improvement of the curriculum planning and the delivery of instruction.

With respect to the analyses of the documentation and the transcripts of the interviews, the degree of strength (or weakness) of classification (C), framing (F), the Epistemic Relation (ER) and the Social Relation (SR) for each item was determined. Classification determines how integrated a subject is within the curriculum – the degree of permeability of the boundaries around that subject. Framing identifies the amount of control wielded within the area of study. The strength of the Epistemic Relation reflects the relation between the knowledge claim and the object of study, and that of the Social Relation acknowledges the value of the individual "gaze" of the observer.

Analysis of course documentation

Based on the template in table 6, another a table was used to analyse the Faculty "core content and skills" document and learning outcomes of PBL cases for undergraduate Medical students (Appendices 4, 5 and 6), by placing them into the theoretical construct of Maton, as shown in Table 7. The raw data in the completed table appears in Appendix 6.

	Chemical Pathology	CPI
Documents		
ER+	M / F / 0	M / F / 0
ER-	M / F / 0	M / F / 0
SR+	M / F / 0	M / F / 0
SR-	M / F / 0	M / F / 0

Table 7: Indication of frequency* of various statements in the course documentation.

* M = relatively many items, F = relatively few items, and 0 = no items were mentioned

(The word "relatively" is used because "many" versus "few" is in the context of the interview under discussion.)

As the analysis of the data is within each subject / course, it is more valuable to compare the results by viewing the columns (*id est*, top to bottom) than by comparing across the rows.

Analysis of the staff interviews

During the interviews of staff members, three distinct areas were addressed:

- the Specialist in their discipline,
- the field that makes up their discipline,
- the undergraduate student studying their subject as part of the course.

As stated earlier, the views expressed by the Specialists who were interviewed may or may not reflect the views of their colleagues. The conclusions I have drawn are based only on the interviews, as analysed below.

With respect to the Epistemic Relation (ER), the data was analysed as to whether the knowledge and correct procedural skills are explicitly emphasised in the study of a specific area (described as ER+), or whether the Knowledge structure and methods used in the study of the object are loosely bound (described as ER-). Regarding the Social Relation (SR), the examples were analysed as to whether the unique insight of the subject of the study (the person) is important, indicating a strong Social Relation (SR+), or whether there is a weak Social Relation (SR-), as when there are weak boundaries and there is

weak control around the subject of the study, or whether the attributes or insight of the Knower are "irrelevant".

The interviews with staff members were transcribed, and key elements, items and themes that arose were assigned a value of either ER+, ER-, SR+, or SR-, based on the nature of the comment. The collated comments made by staff members were placed into the theoretical construct of Maton, as illustrated in the tables below, in order to inform the analysis of the data. The raw data in the completed table appears in Appendix 6.

	Chemical Path 1st interviewee	Chemical Path 2nd interviewee	Psychiatry	Medical Anthropology
Specialist				
ER+	M / F / 0	M / F / 0	M / F / 0	M / F / 0
ER-	M / F / 0	M / F / 0	M / F / 0	M / F / 0
SR+	M / F / 0	M / F / 0	M / F / 0	M / F / 0
SR-	M / F / 0	M / F / 0	M / F / 0	M / F / 0
Discipline	M / F / 0	M / F / 0	M / F / 0	M / F / 0
ER+	M / F / 0	M / F / 0	M / F / 0	M / F / 0
ER-	M / F / 0	M / F / 0	M / F / 0	M / F / 0
SR+	M / F / 0	M / F / 0	M / F / 0	M / F / 0
SR-	M / F / 0	M / F / 0	M / F / 0	M / F / 0
Student / Subject	M / F / 0	M / F / 0	M / F / 0	M / F / 0
ER+	M / F / 0	M / F / 0	M / F / 0	M / F / 0
ER-	M / F / 0	M / F / 0	M / F / 0	M / F / 0
SR+	M / F / 0	M / F / 0	M / F / 0	M / F / 0
SR-	M / F / 0	M / F / 0	M / F / 0	M / F / 0

Table 8: Indication of frequency* of various statements in the interviews.

* M = relatively many items, F = relatively few items, and 0 = no items were mentioned

(Once again, the word "relatively" is used because "many" versus "few" is in the context of the interview under discussion.)

Again, it must be emphasised that the analysis of the data produced from the interviews with staff members is within each subject / course, and should be compared by the columns from top to bottom, and not by viewing across the rows.

Processing of data obtained

My original intention was to count the number of items that appeared in each block of the table, in order to gain an impression of the relative strengths of C, F, ER and SR. If an item covered a topic which was expanded upon during the course of the interview, that specific item was still considered only once. For example, if the interviewee stated that a student will be required to (1) request and (2) interpret a variety of laboratory results, (3) decide on a therapeutic strategy based on these outcomes, (4) monitor the progress of the patient (5) by repeating certain of the tests, and (6) responding appropriately to these results, then this was considered to represent six items. If the interviewee then proceeded to explain in detail how laboratory results may be elevated or decreased, how therapeutic measures may affect subsequent results, and how a health care practitioner will then need to make adjustments to the treatment regimen based on the changing laboratory results, this remained as a tally of six. It was important to be consistent in this regard in order to prevent the over-inflation of the representation of items when logging data from expansive versus more concise responses from interviewees. Because this approach did not adequately reflect the interplay between the Knowledge and Knower structures within these subjects, more of an interpretive approach to the analyses was adopted later on. The items that had been classified in the tables were then rather used to support, elaborate and challenge what emerged from the documents and interviews. Upon reflection, this two-tiered approach worked well because the initial counting exercise gave a sense of which structure was dominating in each subject area, but the deeper analysis required a more interpretive approach.

When portions of the interviews are quoted verbatim, the use of ". . ." indicates the removal of words or phrases that do not directly relate to the issue currently being discussed. The names of colleagues, as referred to by interviewees, have been removed and replaced by "[a colleague]".

The object of this research project is to explore the basis of legitimation of knowledge claims for each of the chosen disciplines, and the four interviewees offer their perspectives as Specialists involved in each of the courses analysed. The outcomes of these analyses offer an understanding of the underlying principles about what is valued in Chemical Pathology and in Culture, Psyche and Illness when it comes to these specific Specialists' involvement in knowledge production and recontextualisation for the MBChB curriculum that is under study here.

In order to provide an additional lens through which to interpret my data, each of the four interviewees was asked to address the appearance of the interlocking circles of *knowing*, *acting* and *being*, as developed by Barnett and Coate (2005). As explained in the Theoretical Construct, the link here to Maton's methods of analysis is that the degree to which the Knowledge and the Knower are valued will be reflected in the relative sizes of the three circles. In particular, the size of the *being* circle will reveal information about the valuing of the Knower. I first gave an overview of how these authors arrived at their circles, and how the sizes of each one is decided. The interviewees were then asked to draw three representations of the interlocking circles of *knowing*, *acting* and *being* for their field, applicable firstly to Specialists, then to their discipline, and finally to the subject area for the undergraduate MBChB student. Based on the analysis of the data obtained from the course documentation and staff interviews, I was then able to draw my own representations of the circles. A comparison could then be made between these representations and those the staff members interviewed had prepared, in order to establish the degree of alignment. The data obtained may be found in Appendix 7.

4.7 Validity

In order to ensure that the findings of the analysis of the documentation are valid, a standard analytical approach was adopted for both subjects. To ensure that the findings from the interviews are meaningful, similar questions were asked about Knowledge structures for both subjects, and were asked more than once but approached from different angles. It should be re-emphasised that the views expressed by the Specialists who were interviewed may or may not reflect the views of their colleagues, which means that one must be cautious about making generalisations. My conclusions from the interviews are based only on the data that was gathered, and I am not in a position to make statements about the fields of specialism as a whole.

Chapter 5: Analysis

5.1 Brief review of the Theoretical Construct

In each of the analyses below, the following template will be used, based on the work of Maton (2007):

- **Strong Epistemic Relation (ER+)** when knowledge and correct procedural skills are explicitly emphasised as the basis of achievement,
- **Weak Epistemic Relation (ER-)** when the Knowledge structure and methods used in the study of the object are loosely bound (less explicitly emphasised),
- **Strong Social Relation (SR+)** when the unique insight of the subject of the study (the person) is important as the basis of achievement , and
- **Weak Social Relation (SR-)** when there are weak boundaries and there is weak control around the subject of the study, or when the attributes and insight of the Knower are "irrelevant".

5.2 Case 1: Chemical Pathology

The field of Chemical Pathology is where knowledge production occurs and where that knowledge is recontextualised into the undergraduate Medical curriculum. The field comprises the discipline, which represents the knowledge and the application thereof, and the Chemical Pathologist, the Specialist, who acts as the agent of knowledge production and of recontextualisation. For the analysis of the types of Chemical Pathology knowledge that are valued within the Medical curriculum, two main areas need to be explored:

- the field of Chemical Pathology, which will provide information on what is valued by Chemical Pathologists, and will therefore shed light on the knowledge that is being recontextualised into the undergraduate curriculum, and
- the course documentation that sets out the knowledge and procedural skills that need to be mastered by the undergraduate student.

In the analysis presented below, I have combined the data from the two interviewees into one discussion, and will first cover the Specialist and the discipline in Chemical Pathology (5.2.1), followed by the subject in the undergraduate programme (5.2.2).

5.2.1 Basis of legitimation in Chemical Pathology: Specialist and Discipline

When the two Chemical Pathologists were interviewed about their role as Specialists, both interviewees described the very structured route to be followed in the process of specialisation, and emphasised the strength of the framing (+F) all the way along in this academic process.

"... in the context of South Africa, the route to becoming a Specialist is the person does their Medical degree ... they apply for a numbered Registrar position at any academic institution, in a Department of Chemical Pathology, and so they enter a training programme. All the Registrar posts have to be accredited by the HPCSA. And then once they've entered a training programme, they'll spend their four years doing the training, and then they'll do the exit exam ... that allows them to apply for registration as a Specialist and that's automatically approved if they got the exam." (Interviewee 1, Interview 1, page 1)

These are medically qualified staff who have studied further, and are involved in clinical problem solving exercises and devising an action plan based on laboratory results. These people are involved in clinical service delivery, and use a repertoire of laboratory tests that are used for diagnostic services for their colleagues. There is a strong relation between the knowledge claims and the object of study (ER+), and Specialists in this field concur on a core body of factual knowledge, applied in a variety of situations (*id est*, the transfer of knowledge).

A Chemical Pathologist needs to perform collaborative research and identify interesting fields of research where the results will be of value to the practice of medicine (Interviewee 2, Interview 1, pages 5 and 6). When describing the nature of their clinical work, what emerged was their form of collaboration with other health care workers, and being a member of a team of clinical specialities who interact in the provision of bridges between disciplines. There is a role in educating general practitioners and other Specialists, and passing on knowledge, but the role of a Chemical Pathologist remains very clear (+F), and there are also very distinct boundaries around the subject (+C).

"I think we kind of educate - as in another kind of way where we have to educate the Medics, like GP's or Specialists, in new developments in the understanding of the biochemical basis of disease, that sort of thing." (Interviewee 2, Interview 1, page 3)

The Specialist will need to be able to participate actively on ward rounds and interact with patients:

"The Chemical Pathologist is not required to interact with patients, but there are Chemical Pathologists who do interact; and the changes that we are being driven towards are already happening in the UK – so ... they do actually have to go and do ward rounds - either treat patients inside the hospital or as outpatients in clinics." (Interviewee 1, Interview 1, page 5)

This particular interviewee expressed his personal opinion that the participation of clinicians in ward rounds, as occurs in some other countries, is highly desirable, but is not happening as yet in South Africa.

Finally, according to both interviewees, when Chemical Pathology is applied in a clinical setting, it is the application of the practitioner's skills that is important. Examples mentioned by the Specialists were the ability to evaluate a situation, to adopt an analytic approach (even the terms "preanalytical" and "postanalytical" are used later on in one of the interviews), to determine the involvement of specific factors in causing a certain effect, to monitor a patient and make a multitude of decisions as time passes and as more information is revealed, to make an accurate prognosis, determine the relevance of a result and work with variables. The success of the application of the knowledge and procedural skills in Chemical Pathology will be affected by the clinical, logical, and analytical skills and reflective abilities of the practitioner. The success of medical intervention will hinge on these skills, and this combination of knowledge and application reveals a strong Epistemic Relation (ER+). Neither of the two interviewees mentioned anything that could be viewed as relating to the Social Relation (SR).

Based on the combination of the evidence from these two interviews, the Specialist is seen as belonging to a Knowledge code for their field of expertise [ER+ (+C, +F), SR- (-C, -F)].

When these Specialists were interviewed about the discipline of Chemical Pathology on postgraduate (Specialist) level, the main characteristic that emerges is that the discipline covers laboratory information systems, the technology for tests and test results, focussing mainly on quantitative analyses. The discipline of Chemical Pathology is about understanding the mechanisms of disease conditions, using both global principles and the local context. It is about measuring substances, interpreting laboratory results, and drawing conclusions. The discipline involves dealing with numbers, making comparisons, and using both established and new scientific methods. There are clearly set out so-called "standard operating procedures".

" ... to me it is because it (the discipline) deals with numbers, quantitates medicine - it's not empirical ... what I like about Chem Path is that you kind of really get to delve deep into the basic understanding of the disease and you measure stuff. To me, it's the one branch of Medicine that you actually measure things and draw conclusions, and compare and it uses very scientific methods, I mean a laboratory is a scientific institution as opposed to a clinic." (Interviewee 2, Interview 1, page 9)

Certain factual information studied for the discipline does not change, but other areas do change as technology develops and as new fields arise, and there needs to be consensus among Specialists around these changes and improvements:

"It's like any field I guess, it's always moving, it's always developing. New fields just arise, like Molecular Biology just wasn't around when I was a Registrar about in the 70's and it's a massive field now. It's probably about a third of the subject, something like that." (Interviewee 2, Interview 1, page 2)

The data revealed very strong framing (+F) when it came to postgraduate assessments processes. The examinations for the discipline are set and monitored by members of the Colleges of Medicine, a national body, and are accredited by the Health Professions Council of South Africa (HPCSA). Both interviewees spoke of a "guild of Specialists" that is involved in these examinations:

It's just like a Guild in a way because I mean they are the guys that set the exams and there's nobody else." (Interviewee 2, Interview 1, page 2)

As can be seen, all of these aspects of Chemical Pathology function quite independently of the subject of the study, *id est*, the person involved. These are all examples of a strong relation between the knowledge claims and the object of study, *id est* a strong Epistemic Relation (ER+).

Both interviewees spoke of the ability to perform collaboratively in a team of health care workers by playing a role as part of the multidisciplinary team engaging in the treatment of a patient, but there is little evidence of an integrated approach, *id est*, an interdisciplinary team. The roles are well described and the boundaries between disciplines remain evident, albeit there is a collaborative approach, thus pointing to a classification that is strong (+C).

"You're almost like a bridge between Specialists, to allow people to talk to each other to understand each other - to kind of act as an interface between like Basic Science and the practice of Medicine." (Interviewee 2, Interview 1, page 3-4)

Interviewee 2 spoke about the boundaries around his discipline in the following way:

"I think boundaries are arbitrary anyway. It's just they're traditional, and for us, they serve their purpose in that they help focus you on your sort of area of interest. … I think it's crazy to try and stay in these arbitrary boundaries people draw up for you." (Interviewee 2, Interview 1, page 6)

Although this Interviewee commented that he thinks the boundaries which exist are arbitrary, in his view they are indeed there, revealing a strong classification (+C).

Since these interviews were about the discipline, there was very little mention made of the observer (the person). Any such references related to the qualitative interpretation of laboratory results, where the personal "gaze" of the subject plays a role, but the "gaze" needs to well grounded in knowledge and its application.

Based on the combination of the evidence from the previous interviews, the discipline is seen as belonging to a Knowledge code [ER+ (+C, +F), SR- (-C, -F)].

When examining the field of knowledge production and recontextualisation, both the Specialist and the discipline emerge as Knowledge codes. The field informs the undergraduate Medical curriculum and determines what is to be studied by students. In a traditional curriculum, the various subjects are delivered as finite units that are carefully sequenced, resulting in a Collection Code. The question may now be posed as to whether this has changed with respect to the "new" PBL model at UCT. To address this question, we need to analyse the course documentation and learning outcomes for Chemical Pathology for MBChB, as well as interviews with appropriate staff members.

5.2.2 Basis of legitimation in Chemical Pathology: Undergraduate course documentation

Having studied all the learning outcomes for each of the 20 PBL cases, as well as the "core content and skills" list for Chemical Pathology, key words that reflect the type of educational knowledge valued in Chemical Pathology were collated (see Appendix 4, "*Chemical Pathology – list of core knowledge – Years 1-6*"). These words reflect the nature of the input of Chemical Pathology (the content) into a wide range of disease conditions. Some of the action words considered were *define, determine, evaluate, interpret, investigate, measure, monitor, recognise, screen, test* and *use*. The items listed in the Faculty documentation that related specifically to Chemical Pathology reflect the type of knowledge an undergraduate student would need to master, and the learning outcomes for each PBL case reflect the sequence in which this material is delivered and studied. These data were then analysed. Based on Maton's definitions of Epistemic Relation and Social Relation, each item was evaluated as to the degree of strength of the classification (C) and framing (F), and the degree of strength of the ER or SR, for its placement on the ER/SR continua.

The following examples of educational knowledge may be found in the learning outcomes from PBL cases. The various biochemical and physiological cycles of the body are well described. A large part of the study of Chemical Pathology involves the actions of various enzymes and hormones. PBL case 2 is about back pain, which involves the study of the dynamic nature of bone, where calcium, phosphate and magnesium metabolism is controlled by calcitonin and parathyroid hormones (see item 9). The PBL cases that deal with digestion and absorption (case 9), the functioning of the liver (case 10) and the production of steroid hormones (cases 12 and 13; male and female reproductive systems) will involve learning about lipid [fat] metabolism (see item 10). Maintaining the correct levels of plasma proteins is important for the components of blood and extracellular fluid to ensure effective bodily functions, which would involve studying such enzymes as α-1-antitrypsin, haptoglobin and caeruloplasmin (see item 11). Students will need to learn how the effects of the actions of hormones and enzymes interrelate and how a balance

between actions and interactions is achieved or lost (such as in disorders of acid/base homeostasis, item 3).

Several PBL cases will investigate what can cause these balances to "go wrong" in all the different systems of the body. For each of the 20 PBL cases, the students will be made aware of which samples a practitioner would take from the patient and which laboratory tests would be requested from the Chemical Pathology laboratory. Students are expected to know what the laboratory results mean (the values for the patient compared with the "normal ranges" for humans, item 34). This would lead to an awareness of how to monitor whether a patient is improving or deteriorating (drug monitoring, item 33), and how to investigate the patient from that point onwards.

What can be seen from the data in these two paragraphs is the degree to which students' learning is focused on facts about the functioning of the different systems of the body. The knowledge claims here are very specific and explicit, and there is strong framing (+F) as a result of the control (by the Specialists) over the procedures for validating these knowledge claims. These biochemical and hormonal events are completely unaffected by the particular gaze of the observer who is making knowledge claims about the body's responses to disease. Knowing how an enzyme or hormone functions in the body, how all the different enzymes and hormones operate together to achieve homeostasis, the mechanisms by which homeostasis can become disrupted and how the body responds to that disruption is all knowledge that can be described as exhibiting strong C (classification) and F (framing) of the Epistemic Relation, as these are explicit specialised facts and procedures. The study of biochemical and endocrine cycles in the body is based on information that has been discovered by Specialists in this field, usually many years ago. There is general agreement amongst all Specialists that this information is factually correct and is core information that students need to master. The application of knowledge about these cycles will be taught by Specialists in the field of Chemical Pathology, in a specific sequence. Being able to interpret laboratory results requires the processing of information when one is presented with the results of a patient's samples. This means knowing what the normal range of values is in order to determine whether a result is elevated or depressed, the meaning of altered values, the impact of these on the body as a whole and how the body responds, and the mechanism of disease in this situation, thus enabling the drawing up of a treatment regimen that includes the monitoring of the patient for improvement.

In all of these situations, judgements about the disease condition do not depend on the individual observer who is making the knowledge claim (in this case, the student); otherwise the assessment and treatment of the patient will become too variable, not necessarily founded on evidence-based medicine, and possibly even inappropriate. The successful practice of Chemical Pathology and the basis for achievement in the field will be dependent on the careful adherence to the factual guidelines that are described above,

indicating a strong Epistemic Relation (ER+). There is a strong relationship between the object of knowledge (such as the laboratory results) and the knowledge claim that is made by the observer.

In the analysis of the course documentation (Appendix 4), no mention is made of whether success in the application (by the person) of the factual knowledge and skills in Chemical Pathology is affected by any clinical, logical, and analytical skills or her/his reflective abilities. In other words, there is no explicit indication here that the success of medical intervention will hinge on the skills and qualities of the practitioner. Based on the documentation, one can thus conclude that the basis of achievement lies in the study of factual information in Chemical Pathology (ER+).

The next step is to reflect on whether the staff members who were interviewed about their subject in the undergraduate curriculum can shed further light on this analysis.

5.2.3 Basis of legitimation in Chemical Pathology: interviews about the Undergraduate subject

Features of the Epistemic Relation made up the main content of the interviews about the subject with both Specialists. Discussions were around identifying core material that needs to be studied by the students, learning about common disease conditions, studying less complicated medical conditions that a general practitioner would be exposed to, examining the physiological responses of the body, measuring alterations to components of the body, and learning about a barrage of quantitative and qualitative laboratory tests.

"What we did is we had the postgraduate syllabus, we looked at a few textbooks that were available to us, and we looked at all the chapter headings, and used that as a starting point." (Interviewee 1, Interview 2, page 2)

"Yes, this was a team … then each person decided that these were the important things, and when each person had done their share, we had a meeting and we sat down together, and we put the stuff up on the screen and went through everything. And then obviously people said, "Oh well you know this is important and that's important and they should know this and that", and so we built up a list of our own work." (Interviewee 1, Interview 2, page 2)

The student is expected to know the "normal state" of the body by having a fundamental understanding of the Basic Sciences, and then extrapolate this knowledge to the understanding of the underlying basis for the symptoms and clinical signs of a disease condition. They will learn which laboratory investigations to request for a specific patient and how to interpret any changes in values (the test results). Therefore the work that they are studying is about the application of Chemical Pathology in making a medical diagnosis: the "rational" use of diagnostic tests. Clearly, this is all grounded in factual information and application thereof; there is consensus amongst lecturers about what needs to be studied by students, and

there is a strong relation between the knowledge claims and the object of study. There is strong framing (+F) when it comes to the setting up of the body of educational knowledge that needs to be mastered by the undergraduate student. Finally, the data is silent with respect to the Social Relation.

Based on the combination of the evidence from these interviews, the undergraduate subject is seen as belonging to a Knowledge code [ER+ (+C, +F), SR- (-C, -F)].

To summarise, in the analysis of the course documentation and the staff interviews about the subject, the main emphasis is on knowing, understanding and applying disciplinary knowledge and laboratory skills. Obviously success in this undergraduate field relies heavily on facts, figures and the correct interpretation of laboratory results. The core content in Chemical Pathology is clearly set out in the course documentation, as determined by the Specialists in this field, and students are explicitly told what to learn. This all points to the fact that the application of the field is actually grounded in what can be described as "generalised truths" that are minimally or never affected by variables in individual human beings, in other disciplines, or in patients located anywhere around the world. Furthermore, since no reference is made to the integration of Chemical Pathology with other clinical disciplines, it appears that there are strong boundaries around this subject on an undergraduate level (+C). Biochemical reactions and responses in the body are completely unaffected by the particular gaze of the observer who is making knowledge claims about these metabolic responses, and this area is not referred to in the course documentation or in the interviews. It can therefore be strongly argued that the subject of Chemical Pathology reflects a Knowledge code [ER+ (+C, +F), SR- (-C, -F)].

Based on achievement of success in this field (what is "valued"), the subject may be positioned in Maton's quadrants in the ER+ / SR- quadrant (the Knowledge code), where the Epistemic Relation dominates over the Social Relation.

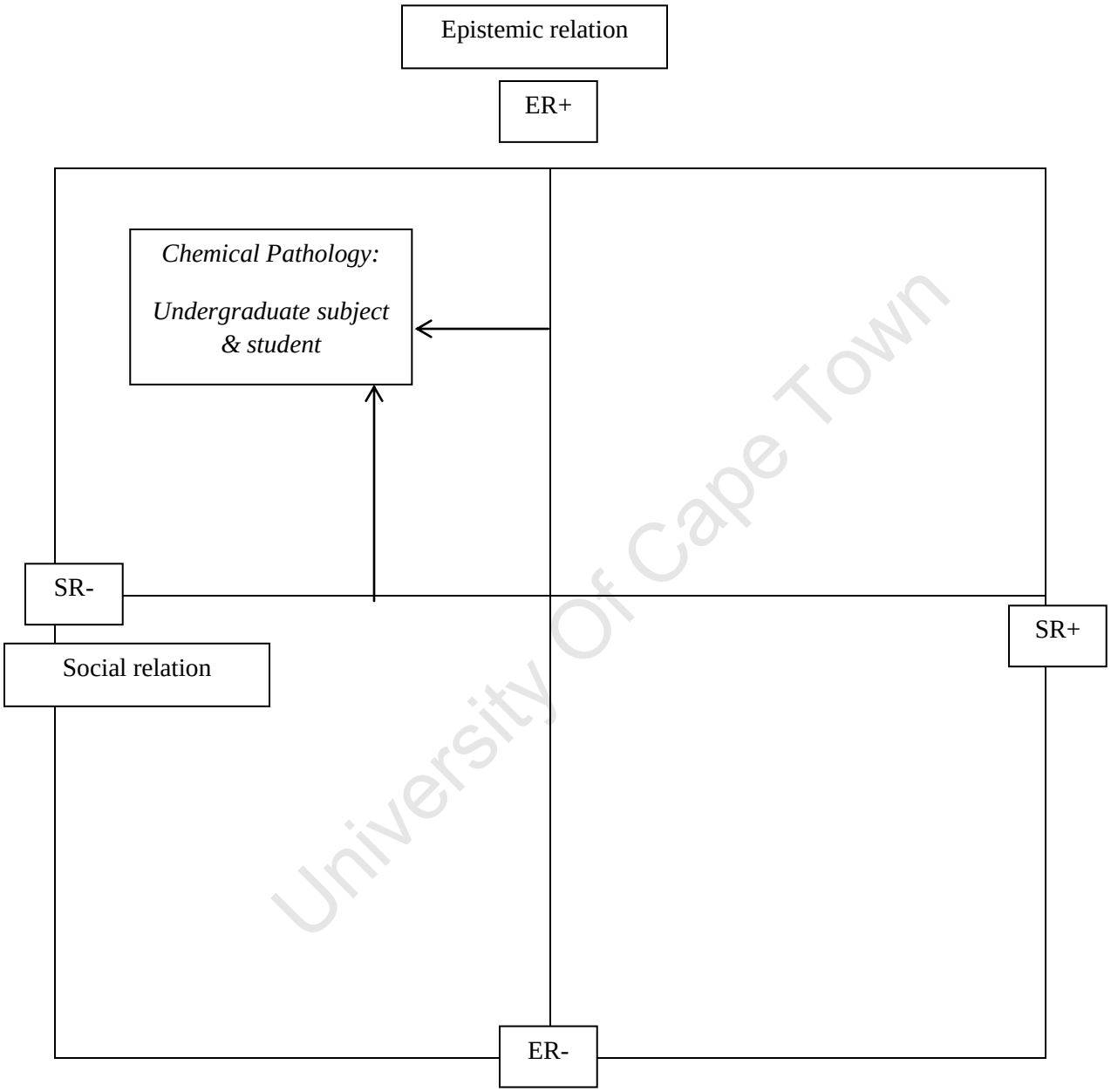


Figure 14: The position of Chemical Pathology in the Undergraduate curriculum.

5.2.4 Summary: Chemical Pathology

When it comes to the characteristics of the Specialist (in other words, the outcomes of the postgraduate courses) in Chemical Pathology, the main emphasis is on knowing, understanding and applying factual information, and mention is made of the personal attributes of the professional within the context of clinical practice. There is an obvious strong emphasis on knowledge, meaning that there is a strong relation between the knowledge claims in Chemical Pathology and the object of study. Furthermore, there is general consensus within the profession regarding the knowledge claims about that object of study. One can thus argue that the Specialist falls into the Knowledge code. When describing the discipline of Chemical Pathology, the dominant feature is the acquisition and application of factual information, with relatively less emphasis on the patient and the health care professional, meaning the discipline falls into the Knowledge code quadrant.

The recontextualisation of knowledge in Chemical Pathology is performed by Specialists whose basis of legitimation is a Knowledge code, working within a field that is a Knowledge code. Thus, it will be logical to argue that the basis of legitimation which the undergraduate student who is studying Chemical Pathology experiences is also a Knowledge code. Although there has been a shift in philosophy in the design of the PBL MBChB curriculum towards creating an integrated curriculum, it would appear from the analysis of course documentation and interviews with staff members that Chemical Pathology retains the characteristics of a course taught within a Collection type of curriculum. Chemical Pathology is based very much on disciplinary logic, with strong boundaries around the subject and strong framing within the subject. The Specialists involved in the delivery of material are aware of a clear disciplinary identity with clear "states" of knowledge (Shay, 2009, personal communication).

5.3 Case 2: Culture, Psyche and Illness

The subject Culture, Psyche and Illness (CPI) is studied by the students in Years 2 and 3 of the MBChB programme, and was introduced as part of the design of the bio-psychosocial model for the new curriculum. According to the grids supplied by academic staff involved in the delivery of CPI, it is actually a thread that runs throughout all six years of the undergraduate degree. The Primary Health Care Approach, in which CPI is embedded, is characterised as "the Faculty's Lead Theme" and is described as "a golden thread throughout the curricula of the UG [Undergraduate] programmes" (*Undergraduate Education Annual Report – 2009*, by Perez *et al.*, 2009). The intention of CPI is to integrate different disciplines and to integrate different parts of the Medical curriculum under the relational idea of bio-psychosocial Medicine. From a design and delivery point of view, CPI is described by staff members as standing in the midst of many different Medical disciplines, acting as the bridge between the biomedical and the psychosocial sciences, between and within the two main courses in Years 2 and 3, namely

Integrated Health Systems (IHS) and Becoming a Doctor (BaDr), with permeable barriers that allow for the transfer of knowledge between disciplines for the enrichment of all areas concerned. This description reflects the desire for interdisciplinarity when it comes to the delivery of the educational knowledge of CPI. This is shown in Appendix 5: *Culture, Psyche and Illness – course documentation – Years 1-6.* Quoting from page 3 of the research proposal by Irlam *et al.* (2009): "Culture, Psyche and Illness (CPI) is a cross-disciplinary theme that encompasses the disciplines of psychology, psychiatry, social science, and medical anthropology"; and further on, "Students' case reports on the clinical relevance of the PHC principles are assessed by means of an annual multi-disciplinary portfolio (MDP) exam at the end of their fourth year."

In the design of case materials and learning objectives, CPI is constructed as an Integration code, comprising five different fields of specialisation: Medical Anthropology, Psychiatry, Social Work, Social Sciences and Psychology (as explained by Vivian, personal communication, 2009). Currently, there are three key team members who represent the recontextualising agents for CPI: a Medical Anthropologist, a Psychiatrist, and a Social Worker. At the time of the interviews with staff members for this research project, only the first two specialities were represented, which is why the analysis of CPI has involved data provided by a Medical Anthropologist and a Psychiatrist.

Knowledge production occurs by Specialists in each of the five disciplines involved in CPI, and these Specialists represent the agents of recontextualisation of knowledge in the undergraduate Medical curriculum. For the analysis of the types of knowledge that are valued for CPI, two main areas need to be explored:

- the fields of speciality that make up CPI, which will provide information on what is valued by the representative Specialists, and will therefore shed light on the knowledge which is being recontextualised into the undergraduate curriculum, and
- the course documentation that sets out the type of knowledge that is valued for CPI in the undergraduate curriculum.

In the analysis presented below, I will first discuss the Specialist and the discipline in Psychiatry (5.3.1) and Medical Anthropology (5.3.3), and then discuss the subject of CPI in the undergraduate programme (5.3.5).

5.3.1 Basis of legitimation in Psychiatry: Specialist and Discipline

When asked what is valued in a Psychiatrist, the interviewee first explained that the Specialist must be medically qualified prior to becoming specialised:

" ... in a nut shell, you've got to get a Bachelor of Medicine & Bachelor of Surgery, you do your Internship; you then usually have to spend a year outside of the thing you want to specialise in, and then you do a four year course in South Africa and at the end of those four years you'll then register as a Specialist." (Interviewee 3, Interview 1, page 1)

The carefully mapped out course for becoming a Specialist in Psychiatry is determined by other Specialists in the field, indicating strong framing (+F). He also described knowledge that is very much paradigmatic, as there is consensus amongst the members of the various bodies involved regarding what material and skills need to be mastered in this postgraduate speciality. He comments:

" ... it's people within the University here that decide on how we train the Registrars" (Interviewee 3, Interview 1, page 2)

In practice, he needs to be medically well trained, well informed, and a strict diagnostician.

There are strong boundaries which demarcate the field of Psychiatry, but the barriers are becoming more permeable. These barriers most probably relate to the fact that other health care practitioners find the study of the structure and function of the brain and psychiatric illness somewhat scary, and have decided it best be left to the Specialist. Despite the permeability of the boundaries, it seems clear that the Specialist is still very aware of his responsibilities, even when working within a multiprofessional team.

" ... I think generally Psychiatry and O&G are starting to sort of flow with one another, work more together. Psychiatry and Medicine are working more with one another. There is this concept within Adult Psychiatry of consultation liaison so the Gynaes might be struggling with somebody so they'll ask the Psychiatrist to come in and do an assessment. So there is some sort of joint working there ……" (Interviewee 3, Interview 1, pages 5 and 6)

Based on the views of the interviewee, one can argue that the Specialist in and the discipline of Psychiatry is characterised as having a strong Epistemic Relation (ER+), with strong framing (+F) and strong classification, with evidence of weakening (+↓C).

However, when the interviewee spoke specifically about his role as a Specialist, the focus shifted to the qualities required of the professional. In developing a therapeutic relationship with his patient, he needs to be kind, sympathetic, empathetic, generous, and understanding (Interview 1, page 7). But, as he puts it:

"I think they also have to be terribly critical of themselves and what they doing, and I think they also have – difficult attribute – to maintain a balance between being very supportive and understanding of the difficulties that these patients are going through but at the same time being actually able to confront

patients with what they doing or how they responding to their mental illness or what's going on within their lives." (Interviewee 3, Interview 1, page 7)

The interviewee listed many more qualities that characterise a successful Specialist, and ended off by saying:

"So I think you have to be slightly literary and quite poetic, you have to have a sense of what the universe is, to actually put things in perspective, otherwise you're going to be totally lost in all those terrible stories you hear … " (Interviewee 3, Interview 1, page 8)

The personal attributes of the Psychiatrist play a major role in determining whether he is a successful practitioner; they shape the therapeutic relationship with his patient and mould his interpretations of the knowledge claims he makes. Based on these views, the importance of the personal qualities of the Specialist indicate a strong Social Relation (SR+).

When discussing what is valued in disciplinary knowledge, the interviewee identified "hard core" psychiatric knowledge that must be acquired. As he explained:

"I think if you could divide Psychiatry up into various sections where there's a knowledge base, which I suppose you can do, you just have to look at the chapters of a Psychiatric textbook … there's a basic set of principles that will never change – a certain knowledge base that will never change." (Interviewee 3, Interview 1, page 4)

By describing the assessment process of the postgraduate students, the interviewee shed light on the type of knowledge that is valued:

"The Part 1 exam is usually about the basic Neurosciences, so you are doing Neuroanatomy, Neurophysiology, Neuropsychology; you do basic Psychology, you do basic associated Humanities subjects, a bit of Sociology not that much here … (Part 2 is) another exam, in which you don't focus so much on the Neurosciences; it's more focused on the clinical aspects." (Interviewee 3, Interview 1, page 2)

Disciplinary knowledge covers all the common Psychiatric disorders: how these present, how they are treated, how to formulate a management plan, and how to involve the patient in all of these steps. There is consensus amongst Specialists regarding what constitutes their discipline, reflecting a paradigmatic field with strong classification (+C) and framing (+F), and there is a strong relation between the knowledge claims and the object of study, therefore resulting in a strong Epistemic Relation (ER+).

5.3.2 Summary: Psychiatry

This interview provided insight into the achievement of success in Psychiatry. For the Specialist, both knowledge and the Knower are valued, indicating a basis of legitimation of an Élite code [ER+ (+↓C, +F), SR+ (+↓C, +F)], with evidence of weakening of the classification, according to the interviewee. As a discipline, knowledge is highly valued, and the basis of legitimation is a Knowledge code [ER+ (+C, +F), SR- (-C, -F)].

5.3.3 Basis of legitimation in Medical Anthropology: Specialist and Discipline

In contrast to the Psychiatrist, for the Specialist, the Medical Anthropologist described the more complex path followed in order to become specialised in this relatively new field:

"I have a BSc Hons in Psychology and Anthropology …, and in that, I did Specialist courses, so you took modules in Medical Anthropology, but my actual degree is in Psychology and Anthropology. Then, at a Masters level, I actually studied pure Anthropology, which was Political Anthropology, Social Anthropology, Economic Anthropology, and the Anthropology of Law. But a classic Medical Anthropologist would have done a Masters in Medical Anthropology." (Interviewee 4, Interview 1, page 1)

These Specialists have entered into the Medical arena more than one way, and there is weak framing of the specialisation:

" … a Medical Anthropologist, who is an Africanist, he and (a colleague) were key in deciding, 'Okay, we are going to pull together a group of people who are going to be Specialists in Medical Anthropology.'" (Interviewee 4, Interview 1, page 2)

What draws these people together is a common field of interest, as they have set themselves up to challenge the traditional values upheld in Medicine:

" … the early Medical Anthropologists set themselves up as a counter-point to Medicine, so they wanted to challenge Medicine and wanted to question the authority held by Medicine." (Interviewee 4, Interview 1, page 2)

The Specialist will perform a critique of Medicine, and the basis of legitimation in this new field is a different and challenging perspective on Medicine. As the interviewee explained:

"A good Anthropologist … will listen to what they are able to understand, and they'll build up pictures of knowledge that fit with their Anthropology … they will operate within the context that they're given." (Interviewee 4, Interview 1, page 5)

When asked about the qualities of a Specialist, the interviewee described the individual as being "*a little bit like a chameleon*" (Interview 1, page 4), claiming that Medical Anthropologists value detailed observation and careful recording, followed by a process of reflection and reporting of their points of view. This process is followed by the Specialist interpreting their opinions about that culture "*back …… to the people to see if their perceptions match or don't match*" (Interview 1, page 4). The interviewee expressed a word of caution, though, by saying that the Specialist should "*not …… be judgemental about that information until they have had sufficient time to go back and look at it …*" (Interviewee 4, Interview 1, page 6).

The Specialist needs to work out how people understand themselves (Interviewee 4, Interview 1, page 4). What is valued by Medical Anthropologists is the different way Specialists see the paradigms and frames of reference in response to the demands of their profession, curricula in which they are involved, and the demands of research. An important feature will be to explore new paradigms. For example, the interviewee had this to say about exploring the body beyond normal boundaries:

" … what Medical people and Anthropologists share is, they sort-of want to see inside the body and beyond the body's natural duration … I mean, Anthropologists are about re-membering, they're ultimately philosophers, and they're re-membering the world as Medicine re-members individuals and bodies and puts the psyche back together again. For Anthropologists it's beyond that, it's the ether, the psyche, the soul, or whatever." (Interviewee 4, Interview 1, page 6)

These personal traits of the Specialist lend an individuality to the Medical Anthropologist. There is a strong emphasis on the Knower: the Anthropologist and her/his interpretation. This will result in a strong Social Relation between the Specialist and the object of study (SR+). What is highly regarded in a Medical Anthropologist is the interpretation. A question that can be raised here is, what would be the basis upon which one interpretation would be more valid that another? Consensus may be attained by discussion, debate and negotiation, and may result, over time, in changes to interpretations.

Finally, the interviewee described the practice of Medical Anthropology in Medicine as having permeable boundaries (-C) around the speciality:

"I think it's designed to have a weak classification, but that is particularly so in Medicine. And why Medicine has been able to appropriate Anthropology is because a good doctor requires lateral thinking across those silos of knowledge … " (Interviewee 4, Interview 1, page 5)

With respect to what forms of disciplinary knowledge are valued in the field of Anthropology, the interviewee explained that Specialists have constructed this body of knowledge over time, and this knowledge is open to interpretation, and has been changing:

" ... all the embedded disciplinary knowledge that goes into making a strong Anthropologist, which means actually understanding the theories of evolution, understanding the theories of social interaction, all the core theories that establish a social scientist." (Interviewee 4, Interview 1, page 5)

The examples used by the interviewee show a strong relation between knowledge claims and the object of study (Epistemic Relation, ER+), as well as a system that highly values individuals' arguments in the development of these claims (Social Relation, SR+). Social Anthropology is a field that has evolved over time and is contesting explanatory paradigms, or what Bernstein would call the "languages" which characterise horizontal Knowledge structures. A similar process of development is seen when it comes to Medical Anthropology.

The Medical Anthropology discipline works at the gap in knowledge between Medical culture and patient culture. The body of disciplinary knowledge thus grows by the application of theory to problems. Legitimation of this knowledge is in the theory (ER+), the perspective, and the lens (SR+) that is brought to the data. The roots of Medical Anthropology lie in Social Anthropology, which has a particular basis of legitimation for achievement. Social Anthropology then moves into the Medical arena, which has a different basis of legitimation. This interviewee may be expressing a concern that the appropriation of Anthropology by Medicine has an inherent weakness, in that Medical professionals do not have the "embedded disciplinary knowledge" referred to previously:

"Medicine often gets it wrong because of the mismatch between Anthropological theory and Biological theory or the Basic Sciences, so they appropriate what they need, but they often falsely appropriate the assumptions that Anthropology is making ... " (Interviewee 4, Interview 1, page 3),

It seems that the aim of Medical Anthropology is to critique the basis of legitimation of Medicine, but it is then colonised by Medicine, and, in the process, the field of specialisation may become de-legitimised.

5.3.4 Summary: Medical Anthropology

What can be concluded from this interviewee is that the Medical Anthropologist as a Specialist has a basis of legitimation which is a Knower code [ER- (-C, +F), SR+ (-C, +F)], whereas the discipline of Medical Anthropology is an Élite code [ER+ (-C, +F), SR+ (-C, +F)].

When examining the field of knowledge production and recontextualisation for CPI, more than one code emerges for two of the five fields involved, namely Psychiatry and Medical Anthropology. For Psychiatry, the Specialist appears to be an Élite code and the discipline to be a Knowledge code; for Medical Anthropology, the Specialist emerges as a Knower code and the discipline as an Élite code. The Specialist and the discipline inform the undergraduate Medical curriculum and determine what is to be

studied by the undergraduate student. The thread of CPI is delivered in a way that represents an Integrated Code in the "new" PBL Medical curriculum at UCT.

How does this mixture of codes impact on the nature of knowledge that is valued in the programme? To address this question, we need to analyse the course documentation and learning outcomes for CPI, and the interviews of staff members involved may provide further information of value. For the analysis of the course documentation, examples are taken from two different PBL case scenarios where the learning outcomes point to the valuing of different kinds of knowledge.

5.3.5 Basis of legitimation for CPI: Undergraduate course documentation

Firstly, the course documentation reflects the intention of the Design Team that CPI represents the bridge between the Biomedical and the Psychosocial sciences, with permeable barriers that allow for the transfer of knowledge between disciplines.

After reading through all the learning outcomes for each of the 20 PBL cases, as well as the "core content and skills" list for Culture, Psyche and Illness (see Appendix 5, "*Culture, Psyche and Illness – course documentation – Years 1-6*"), a list was constructed of words that reflect the type of educational knowledge that is valued in CPI. This list reflected the nature of the input of Culture, Psyche and Illness into the study of each of these disease conditions. Some of the considered words were *awareness, belief systems, counselling, dealing (with death and dying; mistakes), cross-cultural issues, needs of special groups, perceptions, rites of passage, shaping of body image, spirituality, transition (to parenthood; to independence), vulnerability,* and *wellness*. The items which were listed in the Faculty documentation that related specifically to CPI reflect the types of knowledge that an undergraduate student will need to cover, and the learning outcomes for each PBL case reflect the sequence in which this material is unrolled.

These data were then analysed. Based on Matton's definitions of Epistemic Relation and Social Relation, each item was evaluated as to the degree of strength of the classification (C) and framing (F), and the degree of strength of the ER or SR, for its placement on the ER/SR continua.

The various disciplines involved in the delivery of CPI require the student to master the material, delivered in a combined and integrated fashion, in order for her to become skilled in this area. Details can be extracted from Appendix 5 to illustrate the knowledge types that are valued in CPI. As explained previously, because five different specialities are involved in the design and delivery of CPI, the course documentation will reflect a collated list of learning outcomes and topics to be studied that arise from all specialities involved. An example of this can be found in the learning outcomes (LO's) for Case 11 (Anaemia), where students are expected to "understand the concept of depression" and to "have a concept of the cultural and social factors (norms, values, attitudes) that may influence dietary restrictions". The

first LO is a reflection of where Psychiatry will provide considerable input. Depression is a clearly defined psychiatric condition; there is a list of several clinical features that characterise depression, and a patient would need to meet a set number of these criteria in order to be diagnosed as being depressed. This represents a finite body of knowledge that needs to be studied and applied. The second LO emerges from the field of Medical Anthropology, where a student is expected to be aware of how cultural and social norms affect the choices made in life. Here, a student would be expected to read background knowledge, then observe people and reflect on what is seen, lending a personal "gaze" to the topic.

A second PBL case that reflects this combination of areas is in Case 20 (Foetal Alcohol Effect / Syndrome). Here, a student is expected to work through a fairly well-defined, knowledge-based LO that asks her to "outline the aetiology of alcoholism", where Psychiatry would provide the basic input around addictive personality traits and substance abuse. Other LO's would refer to more culturally and socially based issues such as considering the "quality of parenting" and "domestic violence". Both of these would involve obtaining background information, followed by observation and reflection, and forming an opinion. Such a combination of LO's results in recognising areas where there is a strong relation between the body of knowledge and the object of study (ER+) and other areas where there is a strong relation between the observer and the object of study (SR+). In the course documentation (Appendix 5), there are many other examples of types of educational knowledge that can be described as having both a strong Epistemic Relation (ER+) and a strong Social Relation (SR+).

There are also several topics in the course documentation (Appendix 5) that reflect a less explicit body of knowledge. An example of this material is the way we adjust to changes in our lives and how we are affected by changing situations (psychosocial, and in roles and responsibilities). One can conclude here that the analysis also reveals areas of the Knowledge structure and certain methods used in the study of the object that are loosely bound and less explicit, thus described as having a weak Epistemic Relation (ER-).

The various topics chosen by staff members for study by the students are specific to their respective knowledge domains; staff set the endpoint of study (the learning outcomes), as well as the nature of the resource material to be used. The appropriate educational knowledge and the sequence in which this material is mastered are determined by Specialists in this field, and therefore there is strong framing (+F). The course documentation does not address the concept of classification (C).

In conclusion, what the course documentation reveals for Culture, Psyche and Illness is that certain portions of the body of educational knowledge (content and skills) show a strong Epistemic Relation (ER+), while other areas show a weaker Epistemic Relation (ER-). The Social Relation is strong (SR+) throughout. Framing is also strong throughout (+F), and classification is not addressed here. Therefore, in

CPI both knowledge and the Knower are valued, indicating a basis of legitimation of an Élite code [ER+ (?C, +F), SR+ (?C, +F)] in certain areas and a Knower code [ER- (?C, -F), SR+ (?C, +F)] in other areas. Although the basis of legitimation for certain portions of CPI is an Élite code, this does not imply that the Knowledge code and the Knower code sit comfortably side by side here – there may be tension present in that union.

The next step is to establish whether the staff who were interviewed about CPI in the undergraduate curriculum can shed further light on the analysis of the course documentation.

5.3.6 Basis of legitimation in CPI: interviews about the Undergraduate subject

There were two interviewees involved, one from Psychiatry (Interviewee 3) and one from Medical Anthropology (Interviewee 4).

When the Psychiatrist was interviewed about CPI as a subject being taught to Undergraduate Medical students, he locates the two main disciplines on a spectrum, by stating:

"The word 'psyche' can be used to describe the broad aspect of one's psyche, but within that, there is also hard core Psychiatric knowledge, and sometimes when I've said this is my role as a Psychiatrist I've been reminded that Psychiatry falls under the remit of CPI. So sometimes what I'm talking about now will be more … Social Anthropological or towards that end of the spectrum, and the other end would be far more hard core Psychiatry." (Interviewee 3, Interview 2, page 1)

This is an interesting reflection on how the interviewee positions his disciplinary knowledge in Psychiatry with respect to Medical Anthropology. It is almost as if he sees these two disciplines at the extremities of a continuum. A little later in the interview, a similar polarity is revealed:

" … but what is 'culture'?, what is 'race'?, what is 'kinship'?, you know – there are very hard core definitions in Social Anthropology, which I'm not aware of; I just have my own common sense in thinking about what that is. In this glossary, there are lots of things like that." (Interviewee 3, Interview 2, page 3)

The interviewee gave various examples of "hard core" facts for Psychiatry and "hard core" definitions in Social Anthropology that a student is expected to master. He highlighted the importance of the learning of these facts, and his concern that CPI not be seen as "wishy-washy". When shown questions about pain that he posed in recent assessments, he responded:

"Part of what was behind this question was to remind people that it's not just waffle, there are five factors, and you get one mark per item, … We put it in to try to draw attention that there are hard core facts on a CPI topic, and I picked that rather than have the students do an esoteric sort-of 'discuss it' thing." (Interviewee 3, Interview 2, page 4)

The fact that Psychiatry is based on a specialisation from a basic Medical degree probably underscores the relevance of factual Biomedical knowledge. The student needs to be informed about common psychiatric disorders: how each presents, how it is treated, how to formulate a management plan, and how to involve patients in all the steps. The student needs to show competence by having the educational knowledge and by putting it into practice, so there is a strong relation between the knowledge claims and the object of study (ER+). This field of educational knowledge has relatively strong control by educators (+F).

According to the interviewee, an understanding of the role of culture in the formation of therapeutic relationships with patients is linked to an understanding of the socio-political climate of South Africa.

"In that socio-political, I would include things like your social status, your access to health care, your own unique understanding of why you've become ill; so all of those types of things, including the religious aspects. So that's in the broader thing – understand culture, socio-political and socio-economic things." (Interviewee 3, Interview 2, page 1)

Therefore, the student is expected to learn how to form a therapeutic relationship with patients who are from different backgrounds and should show respect for different belief systems. The student needs to understand why people may view her differently and to consider what the patient is thinking of her – all an important part of developing an understanding of the doctor / patient relationship.

" ... to be aware of their own prejudice with a small "p", and to actually to be able to learn to be humble and say, 'Look, I really don't understand this and that and please tell me a little more about it'. So I expect them to be honest in their understanding of other people's culture, race, creed, religion, all those things." (Interviewee 3, Interview 2, page 1)

Finally, the student should be aware of what knowledge is relevant in that setting, and what putting that knowledge into practice does to her/his being and her/his way of managing situations (Interviewee 3, Interview 2, page 6). These are examples of where the personal development of the student over time is valued, indicating a strong Social Relation (SR+). Regarding the Social Relation, framing remains strong (+F), as the educationalists themselves are determining the route of development of students, but no mention was made of classification (C).

From the perspective of the Psychiatrist, what is valued in CPI is who the student becomes (is) and what the student knows, resulting in a strong relation between the subject (the student) and the object of study (SR+), as well as a strong relation between the body of knowledge and the object of study (ER+). Based on this interview, CPI has a basis of legitimation of an Élite code [ER+ (?C, +F), SR+ (?C, +F)], but with no specific mention made of the relative strength of classification (C) at any stage. The fact that the permeability of the boundaries around CPI were never addressed by the Psychiatrist may be because of

the strong classification evident in the specialism of Psychiatry, as revealed in the previous interview with this staff member.

The perspective of the Medical Anthropologist about CPI as a subject being taught to Undergraduate Medical students was then obtained. This was the only interview in which the traditional divide between the "preclinical" years and "clinical" years of training was mentioned, namely:

" ... in the preclinical context, I'm aware that I'm putting something in place – theory and precepts and contents that build theoretical and practical knowledge for the students. And then in the clinical years, I feel that what I'm trying to do in that clinical and practical environment is to activate that knowledge or get them to develop their own prior knowledge and build on it ..." (Interviewee 4, Interview 2, page 2)

What emerged was the perspective that CPI is a mixture of a strong Epistemic Relation and a strong Social Relation. The strength of the ER reflects the required ability to define terms, categorise knowledge, stipulate what they mean, and build up information, because, ultimately, the practitioner is required to make a Medical diagnosis. Students are expected to be discriminating, to be able to distinguish factual information, and to discern what is relevant material (Interview 2, page 6). The body of educational knowledge that makes up the subject of CPI is based on a variety of theories that have been developed over many years by several Specialists in the field, having reached a measure of consensus in this regard.

"We are not teaching them soft Psychology and Social Sciences; we're actually teaching them pretty hard nosed skills to be able to understand the world in quite a different way, because we do get a lot of hard theory, and you can see that in the writing that they do and what they're producing for things like abstracts for conferences, etc." (Interviewee 4, Interview 2, page 6)

From the perspective of the Medical Anthropologist, there is a strong relation between the knowledge claims and the object of study (ER+), and the framing is strong (+F). Into this is mixed the idea of valuing the Knower in the context of the Humanities:

" ... this interface is the one that is most exciting, because it really is where Science is, and that includes beginning to understand things like technology and remodelling of the systems; you don't do that without understanding some of the thinking that lies in the Humanities." (Interviewee 4, Interview 2, page 6)

It was the task of the interviewee to achieve this blending process:

" ... it was much more using my own gut sense of what was needed in collaboration with the design team, and what appeared to be relevant in each case – because you are now looking at Pathology, and Physiology, and the Basic Sciences. So what I saw the task to be was to put in the Social Science and psychological mechanisms that were relevant to the Pathology ... " (Interviewee 4, Interview 2, page 1)

The "gaze" of the student was highlighted repeatedly by the interviewee as being one of the important goals of this curriculum, demonstrating the strength of the Social Relation (SR+). This resonated strongly with what was described previously as the role of Medical Anthropologists:

" ... we are teaching students to critically judge what's actually happening ... all the time they have to define, categorise, stipulate, reflect, consider, so that they go through that process of building up information." Interviewee 4, (Interview 2, page 3)

The interviewee described how there needs to be a balance between being able to make a medical diagnosis and showing an understanding of the type of thinking that is encouraged in the Humanities. The interviewee explained that there is an important difference for the Medical students:

" ... all of us judge the world or are discriminating about the world, but Medical people do have to judge difference, and ultimately you have to come to a diagnosis, and you do that through a process of judging and discriminating and evaluating. But ultimately, you have to make a decision; it's about decision making, you judge between A and B, and, unfortunately, for Medical students, and you see this all the time in the ward in the clinical environment, they have to learn to judge, and that is what's frightening for them because they might judge wrong, but that's why you have a decision making process. (Interviewee 4, Interview 2, page 3)

Training students to function in this way takes time, which is why the personal development of the student is carefully mapped out across the six years of the curriculum. The mapping process is done collaboratively by the relevant staff members involved, exercising a strong degree of control (+F).

"Well, I think they know that because the strength of the curriculum lies in the bio-psychosocial being the golden thread. Because, as I said previously, you can never train an Anthropologist in 1 year – you train them in 3 or 4 years, and eventually in PhD." (Interviewee 4, Interview 2, page 4)

The interviewee was explicit about the permeable boundaries around CPI, as it is situated within a group of several other subjects that cover similar course content, such as culture and community:

" ... I'm very much looking at Primary Health Care principles, which pull together CPI and the bio-psychosocial and Public Health and Family Medicine in the context of the clinical setting." (Interviewee 4, Interview 2, page 1)

This joint enterprise would be possible only if there is collaboration between departments, indicating that the boundaries between disciplines would need to be fairly permeable (-C).

When it comes to the application of the content of the CPI course in a clinical setting, that practice will take the form of a multidisciplinary approach. It may be argued here that each Specialist will practise

within her/his domain specifically, but there needs to be permeability between the boundaries of the various specialities in order for there to be a successful outcome:

"And then you must look at dealing with chronic pain through different Medical avenues or Health Care avenues, i.e. the Psychiatrist, the Physiotherapist, the Occupational Therapist, etc. And the more that you move into the chronic nature of pain, the more you move into OT and Allied Health practitioners and Complementary Medicine. (Interviewee 4, Interview 2, page 4)

According to the above views of the interviewee, one may argue that the classification is weak here (-C), as an holistic approach to the treatment of a patient and prevention of disease is one of the golden threads of this curriculum.

5.3.7 Summary: Culture, Psyche and Illness

The first set of interviews shed light on the background of the staff members' perceptions. For Psychiatry, the emphasis for the interview about the Specialist was on the importance of the disciplinary knowledge, as well as on the personal attributes of the professional person, *id est* the qualities of the person, thus revealing a basis of legitimation of an Élite code. For the discipline, Psychiatry emerges as a Knowledge code. Classification and framing were seen to be strong. Medical Anthropology seems to be different, because the "gaze" of the individual is very important, and hence the Specialist has a basis of legitimation of a Knower code and the discipline of an Élite code.

From the perspective of both interviewees, the focus for CPI in the undergraduate Medical curriculum is on the acquisition of factual information (ER+) as well as on the personal development of the student (SR+). Classification was described by the Medical Anthropologist as weakening (-C), to allow for integration across the disciplines, and framing is consistently strong (+F). What therefore emerges from the combined interviews about CPI at undergraduate level is that it can be described as an Élite code [ER+ (-C, +F), SR+ (-C, +F)].

When considering evidence from the course documentation, CPI as a subject falls into two possible areas (Élite and Knower codes), as reflected below:

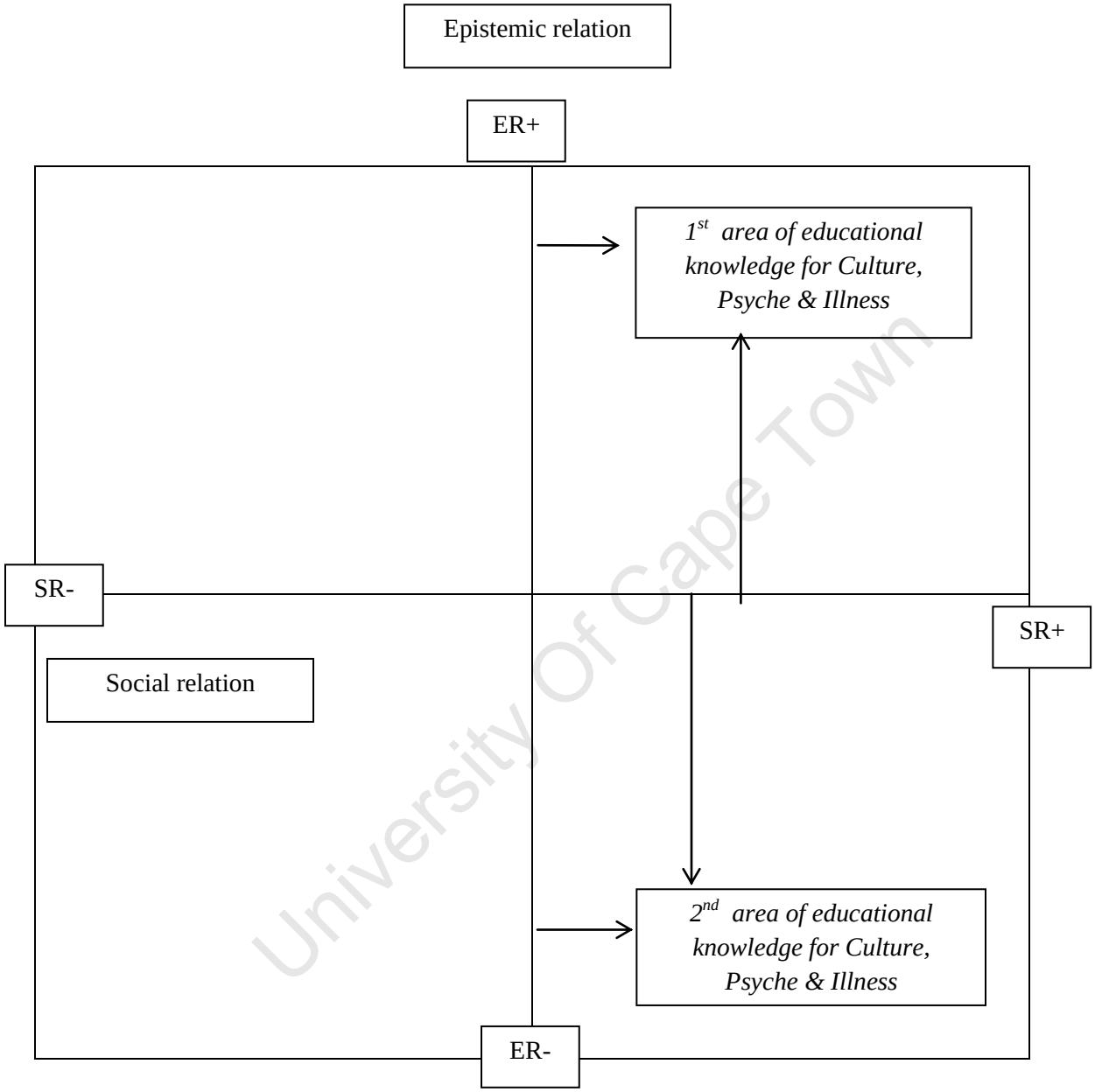


Figure 15: The position of CPI in the Undergraduate curriculum, based on the analysis of course documentation.

When analysing the two interviews about CPI as a subject, it may be placed in only one of Maton's quadrants (Élite code), as reflected below:

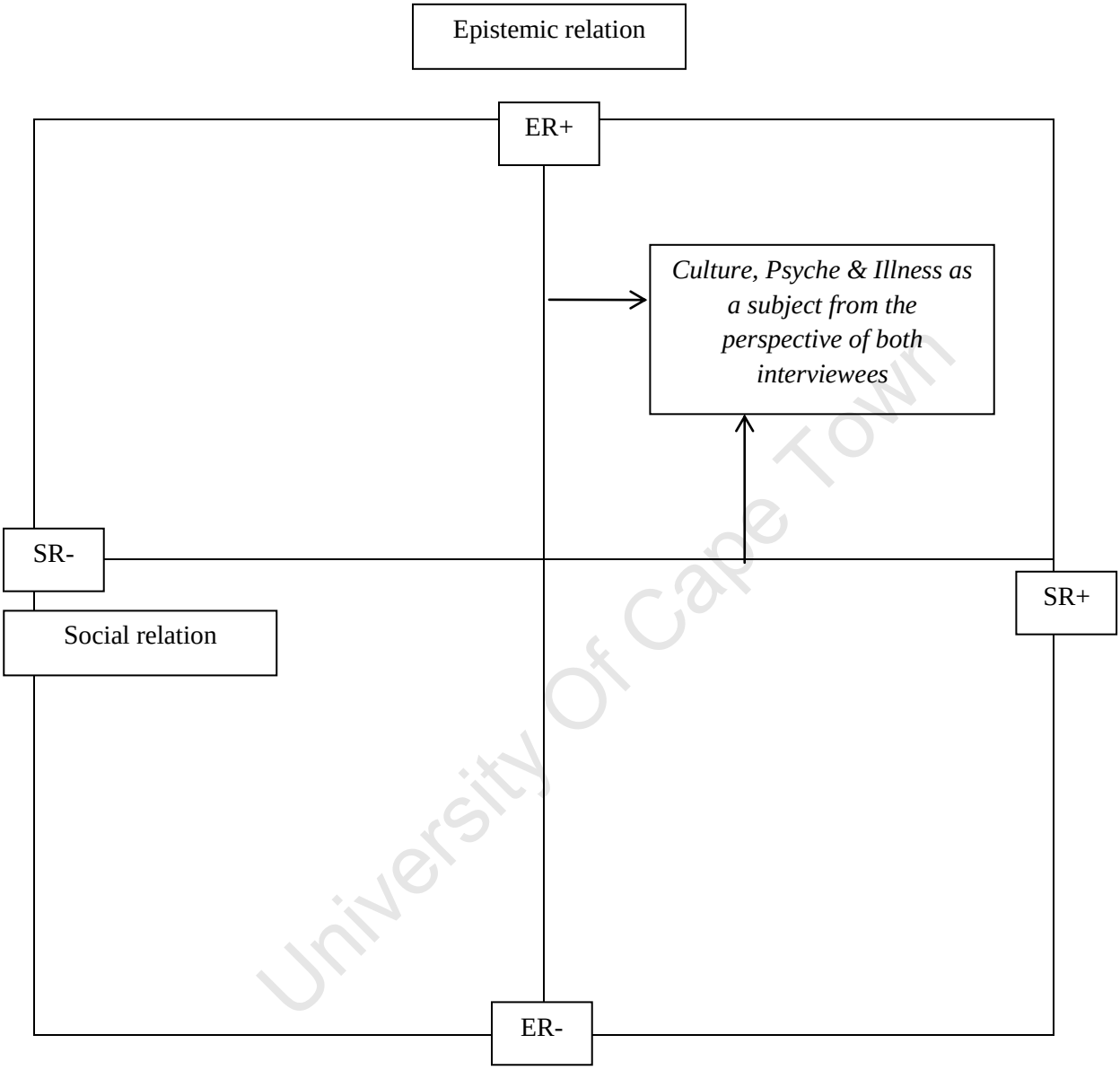


Figure 16: The position of CPI in the Undergraduate curriculum, based on the analysis of the interviews.

This summary reveals possible tensions because of differences in what is valued in CPI according to the Specialists and disciplines involved in the design and delivery of the subject. Psychiatry values both the Knowledge claims and the Knower, resulting in a basis of legitimation of an Élite code that is also reflected in the undergraduate curriculum. Medical Anthropology has a basis of legitimation of a Knower

code for the Specialist, who collaborates with colleagues from other disciplines in designing and delivering CPI, where disciplinary knowledge is also highly valued. It would appear that the Knower becomes less valued in the recontextualisation of Medical Anthropology into CPI in the MBChB curriculum. Furthermore, permeable boundaries are consistently described as highly valued by the Medical Anthropologist, but this was not mentioned by the Psychiatrist, which may result in further tensions when it comes to practising in an integrated way.

5.4 Credibility

During the course of the second interview, the Specialists were asked to draw their interpretations of the three interlocking circles of *knowing*, *acting* and *being* (Barnett and Coate, 2005), to provide another lens through which I could investigate the data provided by the course documentation and the interviews. The interviewees drew three sets of circles which reflected their depictions of the Specialist, their discipline and their undergraduate subject. A second set of circles represented my interpretations based on data obtained from the analysis of the documents and interviews. These sets of circles were then compared for their degree of alignment in order to give me a sense of how accurate all the analyses were. The full analysis appears in Appendix 7.

Based on the views of both interviewees, Chemical Pathology emerged as a similar picture for the Specialist, the discipline and the undergraduate subject, namely that *knowing* and *acting* are given almost equal value, with knowing slightly more valued, and that *being* is less valued than either of them. This matches the sets of circles I drew, based on the analysis of all the data provided. This is also an exact match of what Barnett and Coate drew for subjects in Science and Technology, namely: *knowing* > *acting* > *being*. Interestingly enough, *being* was absent from the depictions drawn by the Chemical Pathologists for the undergraduate subject, and they had to be reminded to add that circle to their drawings. One of the interviewees responded that his role is not to address the *being* of a student, saying "you are either born with it or not", expanding this to all other Science subjects, and stating that it was different for something such as Religious Studies.

When the Psychiatrist discussed the interlocking circles, he compared the three areas of *knowing*, *acting* and *being* with terminology that is used in his speciality, namely, knowledge, skills and attitude. For the Specialist and the discipline, and for CPI, each of the circles was approximately the same size, indicating an equal valuing of the three areas. The interviewee felt that he was "sitting on the fence" by not valuing one of these more than the others. In support of his depictions, mine closely matched his. The only discernable difference was that *being* appeared to be more valued during the interviews.

The interlocking circles for Medical Anthropology were more complex. The interviewee felt that, for the Specialist, *being* was the most value, and therefore the bigger circle. For the discipline, *knowing* was valued most, followed by *being*, and then *acting*. In the case of CPI, the interviewee divided the MBChB programme into the first three and latter three years (see previous references to "preclinical" and "clinical"). For the first three years, acquiring the knowledge is of prime importance, followed by being able to apply that knowledge in a practical way, followed by the personal traits of the student. For the latter three years of the programme, the skills of application are most valued, followed by the knowing, and finally the personal traits of the student. The classification by the interviewee for the first three years of the programme matches Barnett and Coate's depiction for Science and Technology: *knowing* > *acting* > *being*, and the classification for the latter three years is a reasonable match of their example for Humanities: *knowing* > *being* > *acting*. This presents an interesting switch in what is valued between junior and senior students, and differs from what I found from the interview about CPI, where *knowing*, *acting* and *being* all appeared to be equally valued.

Chapter 6: Conclusions

This aim of this investigation was to determine the concepts of differentiated forms of knowledge that inform the Medical curriculum at UCT. The study addresses the characterisation of the nature of the knowledge in Chemical Pathology and Culture, Psyche and Illness (CPI), which are part of the course entitled Integrated Health Systems in Years 2 and 3 of the programme.

6.1 Findings

6.1.1 Case 1: Chemical Pathology

Based on the analyses of the current course documentation and interviews with two Specialists, it is evident that Chemical Pathology, whether in the sense of the Specialist, the discipline, or the Undergraduate course, typically has a stronger Epistemic Relation (ER+) and a weaker Social Relation (SR-), with both strong classification (+C) and framing (+F), and therefore the basis of legitimation is a Knowledge code in all three areas. The analyses reveal that the application of knowledge about Chemical Pathology is quite independent of the Knower.

6.1.2 Case 2: Culture, Psyche and Illness

When the Psychiatrist spoke of the Specialist (a Psychiatrist) and the discipline of Psychiatry, two different codes emerged. The basis of legitimation for a Specialist is an Élite code and for the discipline is a Knowledge code. A change happens when it comes to the successful practice of the discipline; the personal attributes and attitudes of the Specialist are highly valued, and there is evidence that the classification may be weakening. From the perspective of the Psychiatrist, regarding CPI as a subject and its study by the undergraduate student, both educational knowledge and the "gaze" of the student are valued. The interviewee emphasised how important it is for the "hard core" facts about CPI (ER+) and the personal development of the student (SR+) to be foregrounded, especially in assessments. In conclusion, from the interview, the basis of legitimation of the undergraduate subject is an Élite code, showing that there is good alignment between undergraduate and postgraduate degrees, and for practitioners emerging from each of these degrees.

From the perspective of the Medical Anthropologist, when the Specialist studies Social Anthropology as an undergraduate and postgraduate student, there is relatively strong framing, as the curricula are carefully structured with a clear route of progression. When the Specialist then moves into the Medical arena for his/her further experience and practice, the framing remains strong, and the focus of study changes to become specifically honed for Medicine. Medical Anthropology, as a speciality, values the personal attributes of the Specialist and her/his personal development over time. With the discussions

around the discipline of Medical Anthropology, both the acquisition of factual knowledge and the qualities of the Anthropologist were frequently mentioned. The "gaze" of the individual is very important for someone working in Medical Anthropology, and therefore the basis of legitimation is a Knower code. This group of professionals has a common interest in challenging the traditional knowledge claims made by Medical practitioners. These Specialists have moved away from their basic training in Social Anthropology into the relatively new field of Medical Anthropology, and there appears to be a shift in the power dynamic and in the basis of legitimation as a result of working within the Medical arena. There is evidence that the basis of legitimation of the discipline then becomes an Élite code, valuing both the Knowledge and the Knower. When it comes to CPI being taught to the undergraduate Medical student, time was spent on the strength of both the Epistemic Relation and the Social Relation. There was evidence of strong framing (+F) and weak classification (-C) for CPI in this integrated curriculum founded on the bio-psychosocial model. The conclusion is that the basis of legitimation for CPI is an Élite code.

The case has been made that the basis of legitimation for CPI, as evidenced in the analysis of course documentation, emerges as two different legitimation codes, an Élite code and a Knower code, both with weak classification. Both the Specialists who were interviewed, the Psychiatrist and the Medical Anthropologist, described CPI in terms of an Élite code. Unlike the case of Chemical Pathology, where the Specialist, the discipline, and the undergraduate course all have a Knowledge code as a basis of legitimation, CPI emerges as a mixture of codes. Psychiatry is an interesting mixture of a Knowledge code and a Knower code. In addition, the field is totally involved in the investigation into the mental state of a patient, which brings the "human being" into focus, requiring sensitivity and understanding on the part of the practitioner, and making the personal development of the individual relevant.

From the interviews, Medical Anthropology demonstrates the strongest Knower code of the three specialities studied. The "human being" is foregrounded when it comes to the practitioner and the patient. The practitioner will be making educated decisions around patients, based on his interpretation of facts told by the patient and family, and based on his observation of what is happening to the patient in a specific social context. Yet the ability of the practitioner to perform well in this field requires the acquisition of appropriate factual knowledge, which may change the individual and will shape his views. Since Medical Anthropology has its roots in Social Anthropology, the interpretive gaze of the individual, which may differ between different observers in an identical situation, is particularly valued. Medical Anthropology, like Psychiatry, is a mixture of Knowledge and Knower structures, with the emphasis on the Knower.

6.2 Limitations

The findings of this research project are based on the analysis of data obtained from the limited resources of course documentation, interviews with staff members, and examples of questions used in assessments. For this reason, it is not appropriate to generalise the findings to any of the fields of specialisation analysed. Curriculum recontextualisation is a highly complex process, and, in the present study, this has been viewed only through the window of the available course documentation and staff interviews.

6.3 Further research

The following provides a list of possible research topics for further exploration:

- The current area of research could be expanded to include interviews with more Specialists in order to gain a better insight into what is valued as a basis of achievement in each of their fields.
- Since Medical Anthropologists, with their common interest in critiquing Medical practice, have moved into the Medical arena, and the dominance of their Knower code has been altered by the increasing valuing of Knowledge, the impact this has on their personal and professional development, and their ability to function within such a changed academic environment could be explored.
- Cashin and Downey (1995) found there were differences between academic disciplines in the course objectives emphasised, which do not seem to be systematically related to Biglan's clusters of disciplines; *id est*, Biglan's quadrants are not the explanation. With respect to this study of the MBChB curriculum, it would be helpful to consider analysing what is valued in the Specialist, discipline and undergraduate studies in a variety of subjects across Biglan's quadrants – looking for similarities and differences, and to put forward explanations for these.
- It would be interesting to expand the research topic to include information on student learning, uncovering information about how students manage the course content that is delivered to them – exploring the balance between mastering educational knowledge and the personal development of the individual.
- Assessment practice is very topical at the moment in Medical Education, and further research could explore whether the questions and marking guidelines prepared by staff members truly reflect what is valued in their specific academic field.
- This work can also be expanded by examining whether students have similar perceptions of the bases of legitimation for each of the subjects researched.

- Finally, a retrospective look at whether the desired curriculum goals (as itemised in the Graduate Profile) are being achieved, and whether the MBChB curriculum at UCT does fully reflect the intended bio-psychosocial (and spiritual) model would provide valuable feedback for Faculty.

6.4 Implications

The implications of the findings will now be discussed.

6.4.1 Chemical Pathology: a subject with a Knowledge code situated in an Integrated curriculum

There has been a history of a measure of resistance to the implementation of the "new" bio-psychosocial (spiritual) model of PBL curriculum at UCT from certain Specialists in Chemical Pathology. The findings of this study may shed light on this apparent slowness to embrace the new programme, for which three main reasons can be proposed here. Firstly, Chemical Pathology has a strong Knowledge code on undergraduate level. Perhaps this resistance is born out of the fact that the current Specialists were trained in a traditional Collection type of curriculum, but are now operating in an Integrated type of curriculum. A second possibility is that the Specialists in this field may experience difficulty in fully participating in this shift in Medical Education, whereby the "human being" is being reintroduced into the training for the degree. The only time interactions with patients were specifically addressed was when the Specialists were describing the role of Chemical Pathologists participating in ward rounds with colleagues from other disciplines. There are no equivalent learning activities for this subject at undergraduate level. Finally, there may be a belief that Chemical Pathology does not need to foreground Knowers in their undergraduate Medical training, since it is the acquisition and application of knowledge that is of prime importance at this time. The relevance of valuing the "gaze" of the practitioner was described only when it came to Registrars and Specialists, and therefore there is evidence of a change in what is valued in the postgraduate programme compared with the undergraduate programme.

What are the implications of a subject characterised as a Knowledge code, with strong classification, within a curriculum that values the "gaze" of the student and a programme that is intended to be an Integration code? On the one hand, there is poor alignment between the intended curriculum (the outcomes or goals) and the achieved curriculum, which may send mixed messages to the students. On the other hand, the only reliable way to achieve success in Chemical Pathology is by carefully acquiring and mastering the appropriate knowledge, and applying it rigorously and precisely, which does not leave space for individual interpretations (the "gaze") by the practitioner. In this way, Chemical Pathology can be described as an exact, quantitative science. If the students understand that this is the way the subject is meant to be delivered, studied and practised, then there may not be a problem with alignment with the greater curricular outcomes. This situation must simply be made explicit to the students, since it affects

their assessment activities and their ultimate achievement of success. The focus of Chemical Pathology in assessment events may therefore be on pure recall and the application of that knowledge.

The basis of legitimation for Chemical Pathology is a Knowledge code. Is this a problem from a curriculum design point of view, where the aim is to achieve full integration of subjects and to address the bio-psychosocial curriculum model? It is probably unreasonable to expect all of the many subjects delivered as part of the courses in Years 2 and 3 of the programme to fully address the chosen model of the curriculum. Perhaps, at best, staff members can strive to achieve the goals of full integration and the development of the personal attributes of the student at a different level, for example, by rather considering Years 2 and 3 overall. Finally, it is probably inappropriate for Chemical Pathology to begin addressing the task of developing the "gaze" of the student, as this may be far more relevant to other subjects and disciplines, and so is best left up to more appropriate staff in those specific fields. When it comes to the design of the courses, it would be only fair for all staff who are part of the Design Teams to allow each other the flexibility to put together learning activities that are appropriate for their disciplines. Therefore, the staff in Chemical Pathology would need to give the Specialists involved in other subjects the space and freedom to construct portions of the curriculum that focus more on the Knower, and vice versa for the knowledge component of the course. This would also apply to time and space assigned to disciplines for assessment activities.

6.4.2 Combining specialisms with differing bases of legitimation within one undergraduate subject (CPI)

Regarding Culture, Psyche and Illness, there has been evidence of an apparent tension for some years now between Psychiatry and Medical Anthropology in the unrolling of CPI, and the Medical degree as a whole. This may be due to the fact that, although both value Knowledge and the Knower, the balance differs between the two disciplines. Whilst Psychiatry values both, equally, Medical Anthropology tends to value the Knower considerably more. An additional complication may be that Psychiatry is well aligned with the codes of legitimation for the Specialist, the discipline, and the Undergraduate subject, whereas Medical Anthropology values the Knower when it comes to the Specialist, but values both knowledge and the Knower as its basis of achievement in the undergraduate Medical curriculum. When two distinct fields are combined into one subject, if they have differing strengths of Epistemic and Social Relations, this may result in tension when it comes to that process of amalgamation, even if the two subjects are quite clear about their disciplines as fields of specialisation. This tension in the amalgamation may be expressed as differences in opinions between the staff members involved in curricular design. As pointed out earlier, it may be that the Knowledge code and the Knower code do not sit comfortably alongside one another within the Élite code, and there may be tensions present. Furthermore, Psychiatry is

characterised by strong classification, according to the Psychiatrist, but Medical Anthropology was repeatedly described as having permeable boundaries, according to the interviewee. It may be that this difference in the permeability of boundaries creates yet another area of tension. These differences could result in a lack of consensus among staff members, which then undermines one of the important criteria for a successful Integrated curriculum (Bernstein, 1975), and possibly impacts on the delivery of the programme and the achievement of curricular goals.

6.4.3 Chemical Pathology and CPI within the overall Medical programme

From the analyses of the course documentation and the interviews with staff members, an interesting contrast is revealed between Chemical Pathology and Culture, Psyche and Illness when it comes to the overall MBChB programme. The Chemical Pathology documentation itemises educational knowledge that needs to be mastered by students in Years 2 and 3 of the MBChB programme. Culture, Psyche and Illness differs from this in that the documentation gives an overall view of the six years of the programme, introducing topics and theories delivered in a stepwise fashion, highlighting horizontal and vertical integration with other subject areas, and emphasising the "spiral of learning". Chemical Pathology appears to focus on the delivery of a defined body of knowledge content in Years 2 and 3, as opposed to CPI that seems to addresses the bigger picture of the personal development of a student across all the years of the programme.

6.4.4 Comparisons with the findings of other authors

How do these research outcomes compare with those of other authors? Hativa (1997) divided the disciplines that she studied into two distinct groupings, namely the Humanities / Social Sciences group and the Mathematics / Natural Sciences and Engineering group, and found differences in professors' concepts of the goals of undergraduate instruction in their department. Differences in goals have been revealed in the current study as well, and it would be important for staff members involved in the design and delivery of the MBChB curriculum to be aware that these differences exist. Marincovich (1995) found that disciplinary differences are based on the organisation of knowledge, as well as the beliefs, attitudes, and perceptions of staff members, and this research project concurs with Marincovich's findings. Schommer-Aikins *et al.* (2003) comment that students who are dealing with "ill-structured domains (e.g. Social Sciences) will struggle in learning when using strategies and epistemological beliefs that apply only to well-structured domains (e.g. Mathematics)" (page 360/361). Their comments should serve as a warning note about students' learning, for staff and students involved in a curriculum such as this one, which is intended to embrace the biomedical and psychosocial groupings of disciplines. Finally, Lattuca and Stark (1994) reviewed several of the definitive studies that describe the factors that distinguish academics in different fields. The authors conclude by suggesting that the advocates of

curricular reform should focus on how each discipline can help students develop those attributes which are most readily fostered by that discipline. This is a call to recognise differences, and to create a situation that is all-inclusive for Specialists, disciplines, and subjects, so is highly relevant to the outcomes of the present study.

6.4.5 Implications presented in a similar case study

Thornton (2008) provides a similar analysis to the current study, in Mathematicians and Mathematics Educators. In order to compare knowledge legitimation within these two fields, Thornton's research used a textual analysis of documents prepared by each of the communities. Using Maton's framework of how knowledge is produced and legitimated within a discipline, he showed that knowledge within the two disciplines he studied relies on different Epistemic Devices. Thornton states that the debates around mathematics education and the school curriculum arise, at least in part, from differing ways of viewing knowledge; in effect a battle for control of the Epistemic Device. He labels these two fields as Knowledge and Knower codes respectively, based on Maton (2000). He found that mathematics had a strongly classified and strongly framed Epistemic Device, with a Social Relation that is weakly classified and framed; "who" develops mathematical knowledge is less important than the knowledge itself. The reverse is true for mathematical education.

What is the relevance of Thornton's research in the present context? These differences have implications for the future of mathematics education in schools, in that each group has a legitimate claim for representation and input in the development of the curriculum and in setting the agenda for school mathematics. Although the desire to speak with one voice is commendable, perhaps ultimately the knowledge legitimation codes in the two fields of research make such a goal not only difficult, he claims, but epistemologically impossible. Rather, it may be more constructive to see these as different but complementary voices.

Can we appropriately extrapolate Thornton's findings to what has happened with the Medical curriculum at UCT? We know that Faculty required staff members from fields with different bases of legitimation and strengths of classification and framing to work together as a Design Team to design, deliver, and review the programme as a whole, aimed at achieving a single set of criteria, as listed in the Graduate Profile. It therefore became necessary for staff members to partially put aside their thoughts and feelings about whether the integrated PBL curriculum and the bio-psychosocial model was valid and rather to focus their energy on how to make things work. Perhaps this resonates with Thornton's feelings that there should be different but complementary voices. What are the implications of this regarding the present research study? It may be that we need to appreciate "different voices" (Thornton, 2008) present in the MBChB curriculum, valuing different things, but working together towards achieving the goals of the

programme. Failure in this regard may result in not meeting one of the essential criteria of an integrated form of curriculum, according to Bernstein (1975), namely some consensus by staff around the relational idea. Even though staff may be working from a background of different bases of legitimation for their subjects, acknowledging this and working together may be what is more productive than dwelling on differences.

6.4.6 Medical Education revisited

Regarding the article by Burger (2001), as highlighted in the Literature Review, the author calls for a broader understanding of complex illnesses and their psychosocial implications, emphasising that the delivery of a revised Medical Education must be based on reflection on the underlying concepts and the relation of the human to his/her world. He acknowledges that the delivery of a programme using a problem based learning setting would provide the necessary skills for a student to recognise different realities, would let them acknowledge and reflect on the status of the observer, and be flexible in their thinking without infringing on the validity of the respective knowledge. Based on what has emerged from this study, it would appear that these skills which Burger mentions are valued by staff members within the "whole" MBChB programme at UCT, in fact are part of the Graduate Profile, and are entrenched in a bio-psychosocial model of curriculum. One could argue that some of these skills are more greatly valued at undergraduate level by some disciplines than by others, and are not really addressed at all by other disciplines.

Kneebone's article (2002), in the Literature Review, argued for a more even balance between Science and Humanities within Medical Education. Kneebone states that clinical practice takes place in a much less certain world than is reflected in the traditional approach to undergraduate teaching and learning, requiring the integration of intellect, skills and emotion. He pleads for a more inclusive approach to alternative paradigms within the educational system. Two of the author's key learning points are that reading the Medical Humanities requires insight into differing world views, and that Medical students and doctors must develop the skills needed to interpret the Humanities literature.

This research indicates that these two points have been addressed by the designers of the MBChB curriculum at UCT, albeit more in certain disciplines than to others. One could argue that subjects which value Biomedical knowledge and its application to a great degree, such as Chemical Pathology, may have difficulty in finding appropriate Humanities literature that can serve as a vehicle for student learning, whereas such literature may be in abundance for subjects such as Medical Anthropology and Psychiatry. Again, one may need to focus on the whole bio-psychosocial programme to judge its degree of success in this regard.

Taking an overall look at the MBChB degree, the question may be posed as to whether each discipline, with Specialists delivering their specific subjects, needs to address the bio-psychosocial model. Perhaps it is more to do with the various subjects and courses being grouped together to meet the desired model overall. If this is the case, then there will be a range of strong and weak Epistemic and Social Relations for the subjects being taught, meaning that there would be differing degrees of value placed on Knowledge and the Knower. Whether the courses are based on the application of facts or the development of the individual, they need to be made to work together in order to meet the Graduate Profile, which describes someone who is well versed in the bio-psychosocial model. It may therefore be useful rather to focus on the overall outcomes of the graduate, and not evaluate each subject individually; *id est*, we should focus on the "whole".

6.4.7 Implications for assessment activities

Finally, when it comes to assessment activities, it can be argued that measuring competence in a field that has a strong Knowledge structure is relatively straight forward, as there is consensus around the criteria of assessment (content and application). Measuring competence in a field that has a strong Knower structure requires well trained assessors to negotiate about and agree on the knowledge that a student must acquire, the skills they must master, and personal attributes they should have. Students would then be assessed against these criteria, usually through portfolio examinations in an oral examination setting. Either way, the criteria of assessment need to be made explicit to the students. Both the disciplines that value knowledge and application, and disciplines that value the Knower should clearly set out how a student may achieve success in those undergraduate subjects, as it may not be obvious to a student entering the Medical programme.

6.2.8 Closing comments

The changes described throughout this study are not only changes in personal beliefs and ways of thinking, or course ideology and content, but profound shifts in epistemology. The vision of these new Medical curricula (and other curricula) across the world has been to address the personal and professional growth and development of students and staff alike, parallel to the mastering of disciplinary knowledge that is essential for the specific fields of study. The traditional Collection Code and biomedical curriculum model have been replaced by an Integrated Code and bio-psychosocial model. Some disciplines appear to have made the transition easily, while others seem to be struggling to accept the changes. Furthermore, other fresh disciplines have made their appearance in these new curricula. All of this is encouraging, because it shows that Medical Education is a living, dynamic field, remodelling itself over time. It is encouraging to see that change is possible in a profession as ancient and traditional as this one. The driving force behind these recent changes was, to refer again to Dr Cecil Helman (see Literature Review),

a reaction to “the Cartesian mind-body split” of some 400 years ago, and, apparently, the successful reintroduction of “the person” into the practice of Medicine in the Third Millennium.

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Appendix 1: The Graduate Profile

UCT Medical Graduate Profile

Profile of UCT MBChB Graduate **(adapted from the Global Minimum Essential Requirements of the International Institute of Medical Education)**

Submitted to SAQA in 2006

GMER-based 7 Competency domains

1.1 Professional values, attitudes, behaviour and ethics

1.1.1 Recognition of moral and ethical principles and legal responsibilities in medicine

1.1.2 Professional values such as excellence, altruism, responsibility, compassion, empathy, accountability, honesty and integrity, and a commitment to scientific methods

1.1.3 Commitment to constructive relationship between the health care professional, the patient and the family with respect for patient's welfare, cultural diversity, beliefs and autonomy

1.1.4 An ability to apply the principles of moral reasoning and decision-making to conflicts within and between ethical, legal and professional issues including those raised by economic constraints, commercialisation of health care, and scientific advances

1.1.5 Self-regulation and a recognition of the need for lifelong learning with an awareness of personal limitations including limitations of one's medical knowledge

1.1.6 Respect for colleagues and other health care professionals and the ability to foster a positive collaborative relationship with them

1.1.7 Plagiarism, confidentiality and ownership of intellectual property

1.1.8 Recognition of ethical and legal issues in medical issues and patient documentation

1.1.9 Commitment to effective planning and time management

1.1.10 Flexibility to adapt to uncertainty and change

1.2 Scientific foundation of medicine

1.2.1 The graduate must possess the knowledge required for the solid scientific foundation of medicine and be able to apply this knowledge to solve medical problems. The graduate must understand the principles underlying medical decisions and actions, and be able to adapt to change with time and the

context of his/her practice. In order to achieve these outcomes, the graduate must demonstrate a knowledge and understanding of:

1.2.1.1 Normal structure and function

1.2.1.2 Molecular, cellular, biochemical and physiological mechanisms that maintain the body's homeostasis

1.2.1.3 Abnormal structure, function and disease

1.2.1.4 Normal and abnormal human behaviour

1.2.1.5 Important determinants and risk factors of health and illnesses and of interaction between man and his physical and social environment

1.2.1.6 The human life cycle and effects of growth, development and aging upon the individual, family and community

1.2.1.7 Clinical medicine

1.2.1.7.1 The aetiology and natural history of acute illnesses and chronic diseases

1.2.1.7.2 Relevant biochemical, pharmacological, surgical, psychological, social and other interventions in acute and chronic illness, in rehabilitation, and end-of-life care

1.2.1.7.3 The principles of drug action and it use, and efficacy of varies therapies

1.2.1.7.4 Epidemiology, health economics and health management

1.3 Communication skills

1.3.1 Communicate effectively with patients and families

1.3.1.1 Listen attentively to elicit and synthesise relevant information about all problems and understanding of their content

1.3.2 Willing and able to instruct others

1.3.3 Interact with other professionals through effective teamwork

1.3.4 Communicate effectively with colleagues, the community, other sectors

1.3.5 Demonstrate sensitivity to cultural and personal factors that improve interactions with patients and the community

1.3.6 Communicate effectively both orally and in writing

1.3.7 Synthesise and present information appropriate to the needs of the audience

1.3.8 Create and maintain good medical records

1.4 Population and health systems

1.4.1 Important determinants and risk factors of health and illnesses in rural and urban South Africa

1.4.2 Interaction between man and his physical and social environment

1.4.3 Graduates should understand their role in protecting and promoting the health of a whole population

1.4.4 They should understand the principles of health systems organisation and their economic and legislative foundations

1.4.5 They should also have a basic understanding of the efficient and effective management of the health care system

1.4.6 Recognise important life-style, genetic, demographic, environmental, social, economic, psychological, and cultural determinants of health and illness

1.4.7 The ability to use the required public health skills to conduct a community health "diagnosis", develop an appropriate management plan and evaluation thereof, relevant to disease, injury and accident prevention

1.4.8 Local and global trends in morbidity and mortality, the impact of migration, trade, and environmental factors on health and the role of international health organisation

1.4.9 Understanding of the need for collective and integrated responsibility for promotion of public health

1.4.10 Understanding of the basics of health systems with particular reference to South Africa

1.4.10.1 Laws, policies and design

1.4.10.2 Organisation and management

1.4.10.3 Financing and cost containment

1.4.10.4 Health care delivery

1.4.11 A willingness to accept leadership when needed and as appropriate in health issues

1.1.12 An understanding of the mechanisms that determine equity in access to health care, effectiveness, and quality of care

1.1.13 Use national, regional and local surveillance data as well as demography and epidemiology in health decisions

1.5 Clinical skills

1.5.1 Take an appropriate history including social issues such as occupational health

1.5.2 Perform a physical and mental status examination

1.5.3 Apply basic diagnostic and technical procedures, to analyse and interpret findings, and to define the nature of a problem

1.5.4 Perform appropriate diagnostic and therapeutic strategies with the focus on life-saving procedures and applying principles of best evidence medicine

1.5.5 Exercise clinical judgment to establish diagnoses and therapies taking into account physical, psychological, social and cultural factors

1.5.6 Recognise immediate life-threatening conditions

1.5.7 Manage common medical emergencies

1.5.8 Manage patients in an effective, efficient and ethical manner including monitoring and evaluation of outcomes

1.5.9 Advise patients regarding health promotion and disease prevention

1.5.10 Understand the appropriate utilisation of human resources, diagnostic interventions, therapeutic modalities and health care facilities

1.6 Management of information

1.6.1 search, collect, organise and interpret health and biomedical information from different databases and sources

1.6.2 Retrieve patient-specific information from a clinical data system

1.6.3 Use information and communication technology to assist in diagnostic, therapeutic and preventive measures, and for surveillance and monitoring health status

1.6.4 Understand the application and limitations of information technology

1.6.5 Maintain records of his/her practice for analysis and improvement

1.7 Critical thinking and research

1.7.1 Demonstrate a critical approach, constructive scepticism, creativity and a research-oriented attitude in professional activities

1.7.2 Understand the power and limitations of scientific thinking based on information obtained from different sources in establishing the causation, treatment and prevention of disease

1.7.3 Use personal judgments for analytical and critical problem solving and seek out information

1.7.4 Identify, formulate and solve patients' problems using scientific thinking based on obtained and correlated information from different sources

1.7.5 Understand the roles of complexity, uncertainty and probability in decisions in medical practice

1.7.6 Formulate hypotheses, collect and critically evaluate data, for the solution of problems

Appendix 2: Faculty document on PHC

UNIVERSITY OF CAPE TOWN, FACULTY OF MEDICINE

THE PRIMARY HEALTH CARE APPROACH AND THE UNIVERSITY OF CAPE TOWN MEDICAL SCHOOL

Adopted by Faculty Assembly on 24 August, 1994

Ratified by Faculty Board on 20 September, 1994

PREAMBLE

Why this Medical Faculty Assembly?

This Faculty Assembly has been called to debate and approve a proposed faculty policy on Primary Health Care. A number of departments in the Faculty are already involved in providing Primary Health Care services, and include the Primary Health Care Approach in their training. The Faculty itself has been involved in some initiatives to establish projects employing the Primary Health Care Approach. However, the Faculty does not have a policy on Primary Health Care, and such activities tend to be uncoordinated and without a common goal.

With this in mind, a workshop was held in March 1994, at which the relevance of the Primary Health Care Approach was discussed, and new directions in Faculty policy were proposed. The meeting was attended by 42 people representing most of the Faculty's departments, the Dean and Deputy Vice Chancellor, the UCT teaching hospitals, and various health authorities. The proposals were summarised in a document, which was sent to all faculty departments for comments, and amended accordingly.

Approval of the policy would not be the end of the process. Continued thought and action throughout the Faculty would be needed. However, adoption would be an important step, and would create a mechanism for developing the policy further.

Why the Faculty should consider the Primary Health Care Approach

This is a time of opportunities as well as threats for the Faculty. To continue to thrive in future, it must be ready to meet the challenges. South Africa is changing rapidly. An elected government has set out to ensure that public services do serve all South Africans. The Primary Health Care Approach provides a useful way of working towards health for all.

Changes in health services are already under way. Steps are being taken to join the fragmented health authorities, to create a single public sector health service. Health authorities are being made responsible

for the full range of services needed by defined populations. While teaching hospital funding is being restricted, there is an increased emphasis on services provided beyond the hospitals. Hospital and ambulatory services are required to cooperate with each other. The education sector is changing too, with increased emphasis on developing the "historically black universities", and on early education.

These developments in health and education require the Faculty to show that it too is changing, and that it justifies the resources and status it has earned in the past. The Faculty is a national and regional resource, producing professionals and knowledge through its involvement in health services, research and training. In the light of the country's changing needs and demands, this is an opportunity for the Faculty to take steps to ensure that our products remain excellent.

What is the Primary Health Care Approach?

The Primary Health Care Approach may seem vague or ideological to some. However, as a philosophy it has been a force for reform, and it encapsulates the way health services are likely to change in future. The concepts have been promoted by the World Health Organisation, and used by many developing and industrialised countries. The main principles of the Primary Health Care Approach are:

1 Comprehensive health care, which includes the following:

(a) Patients should be served at the most appropriate level of care, with a referral chain between the first level of patient contact, and district, regional and academic hospitals. Services at the first level of patient contact (such as clinics and general practitioners) are emphasised because they are relatively accessible and inexpensive. However, hospitals are equally important, supporting the first level of care through training, research and patient care. A wide range of settings should be provided for training.

(b) Preventive, promotive, curative and rehabilitative care should be integrated. Prevention of illness and promotion of health are emphasised, because they often have a greater health impact, at lower cost, than curative care, which comprises the bulk of services. Rehabilitation supports all three modalities. Health professionals should be aware of patients' differing needs for all of these services which should, where possible, be available from the same agency at the same place. Clinical services for individuals should be balanced with public health services which promote the health of populations.

(c) A health team approach acknowledges that different categories of health workers all have important contributions to make.

(d) Intersectoral collaboration with agencies and people working outside the health care sector whose activities influence health (for example those responsible for agriculture, nutrition, water supply, sanitation, housing, and education) is emphasised.

2 Equity, meaning "equal care for equal need", is a priority, with emphasis on services for the poor and the under-served.

3 Community involvement means giving members of communities, individuals and families the ability to control and take responsibility for their own health, by providing information and education, by involving community representatives in planning health services, and by helping community organisations assert their members' rights and interests. These are often political processes in which health professionals may have little to contribute, but to which they should be sensitive and supportive.

4 Ongoing evaluation of the effectiveness, efficiency and equity of health services is necessary to ensure that the maximum benefit is obtained from limited resources.

5 Many of these principles go beyond the scope of a medical Faculty. The following policy proposes specific steps that the Faculty can take to respond to the need for the Primary Health Care Approach in South African health care.

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PROPOSED POLICY ON THE PRIMARY HEALTH CARE APPROACH FOR THE FACULTY OF MEDICINE, UNIVERSITY OF CAPE TOWN g: facadmin/policy/phcpol94.doc/bk

It shall be the **policy** of the Medical Faculty of the University of Cape Town that the **Primary Health Care Approach** (PHCA) is one of its **binding principles** and:

1 WITH RESPECT TO *EDUCATION*, that

1.1 appropriate committee structures are created to plan a strategy for the Faculty-wide introduction of the PHCA and the co-ordination of all primary health care (PHC) activities

Action:

- *the establishment of a standing committee on PHC which will work with the Dean and the rest of the Faculty to ensure that this document is implemented as soon as possible, to formulate general policy and to co-ordinate the current and future day-to-day activities which fall under the rubric of PHC. The committee should include the Dean and heads of departments or suitable delegates, who are either invited or request membership.*

1.2 A comprehensive holistic approach to clinical work and teaching is adopted by all departments and at all levels of care.

Actions:

- *promote this concept throughout the Faculty by means of workshops and other awareness campaigns*
- *ensure that teaching in all departments includes all levels of care, different settings and public health perspectives.*

1.3 A significant portion of the undergraduate teaching programme occurs at each level of the health service, including community based settings (this should also apply, where appropriate, to postgraduate education).

Action:

- *"Off-Campus" teaching activities in all disciplines should be developed by faculty departments, guided and co-ordinated by the Dean's Advisory Committees on PHC and furthered through a process of negotiation with the Western Cape Province health authorities* (see point 14).

1.4 Academic posts and activities are established at the different levels of public health care and at sites and projects which are community based.

Actions:

- *to reach formal agreement with the emerging health authorities to establish and develop academic post structures at a representative selection of service facilities at all levels*
- *develop academic activities to incorporate health projects outside of the public sector health care facilities and those taking place directly in the community* (see point 14 re negotiations)

1.5 Equity between the health disciplines is practised

Actions:

- *ensure that the curriculum for all Faculty health professions contains adequate learning experiences designed to foster knowledge about, and a positive attitude towards other health care disciplines*
- *develop an understanding of the specific roles of various categories of health workers and the way in which they complement each other*

1.6 Existing curricula are reviewed and revised in the light of the PHCA

Actions:

- *give effect to the curricular changes presently proposed by the Undergraduate Medical Education Sub-committee on Primary Health Care for the training of medical students*
- *form a primary health care curriculum development body that encompasses all professional training carried out within the Faculty at both under and postgraduate levels*

1.7 An active continuing education programme is established for personnel in the public sector and community health services

Actions:

- *build on the existing involvement of the Faculty with the continuing medical education needs of the public sector first contact level health services, currently mediated by the Unit of Family Medicine/Primary Health Care. This needs to be expanded to cover all disciplines and all levels of the health care system*
- *form a structure to coordinate the continuing health worker education efforts of the academic institutions to the services, in conjunction with the Universities of Stellenbosch and Western Cape and health authorities*

1.8 The regional initiatives in public health education between tertiary institutions in the metropolitan area are facilitated

Actions:

- *continue with the process of setting up the regional school of public sector health, in conjunction with the other training institutions in the region*
- *ensure that when postgraduate courses relating to public health are developed they are brought to the attention of the regional school of public health.*

2 WITH RESPECT TO *RESEARCH* that:

2.1 Public health and community based research is encouraged. This includes epidemiology, that is population based needs assessment, surveillance and aetiological studies and health systems research.

Action:

- *University committees concerned with research should give due recognition, status and equitable funding to population based epidemiological and health systems research*

2.2 Health systems research is recognised as a legitimate activity with regard to the evaluation and audit of services.

Action:

- *ensure that public health research is adequately represented on the Faculty Research Sub-committee*

3 WITH RESPECT TO *SERVICE* that:

3.1 The Faculty participates in the development of national, provincial and local health care policy.

Actions:

- *continue to be involved with the metropolitan health forum*
- *campaign actively at Faculty level for representation on regional and national fora in order to develop appropriate training within the framework of health care policy, for all categories of health care workers.*

3.2 The Faculty contributes to and promotes the restructuring of the public sector health services in the Western Cape Province, its sub-regions and in the metropolitan area.

Actions:

- *develop a Faculty vision for the ideal health service structure for the Western Cape Province, through a series of discussions and consultations*
- *promote the vision so developed with appropriate planning bodies and in particular the provincial authorities as these structures are established*
- *utilise academic skills to research and evaluate structural changes and developments, both with respect to their impact on population health needs and status, and the effectiveness and efficiency of health services* (see 9 and 10 above)

3.3 The ideal of equally excellent health care at all levels is pursued

Actions:

- *establish continuing education programmes for all professional groups trained by the Faculty*
- *evaluate programmes to establish efficiency and effectiveness within each level of service*

3.4 The Faculty has active and practical involvement and influence upon the clinical content and practice of services at all levels of health care.

Actions:

- *to negotiate with the health authorities and build on Faculty's present academic involvement in such a way that the academic scope of the Faculty is broadened to involve all levels of the public sector health care system. These include first contact, non-Specialist, Specialist and superSpecialist facilities.*
- *develop a partnership with the service structures in order that Faculty involvement may encompass teaching, research, service and service development*

4 WITH RESPECT TO THE *COMMUNITY* that

4.1 Faculty strives to engage the community of Cape Town with respect to their health care needs, and to assist in the development of their capacity to respond.

Action:

- *initiate discussions at Faculty level with community organisations*

4.2 Genuine consultation occurs wherever and whenever the Faculty plans actions that may impact on the lives of community members.

Action:

- *discuss development of specific health facilities or the involvement of the Faculty at specific places with the relevant community organisation*

4.3 The Faculty's unique resources are used by the community.

Actions:

- *ensure that representative community structures are invited to participate in discussions about the development of Faculty facilities, in order to maximise their availability for use by the community*

- *make the Faculty's multidisciplinary resources available, in response to the established needs of communities*
- *investigate joint service and research projects together with the community*
- *offer education and information programmes for health promotion*.

Appendix 3: Pilot Study - Questions asked of staff members involved in two disciplines that fall into two different areas of Biglan's quadrants, and the answers from these staff members.

Graham Louw [27/04/2007]

The two subjects chosen were Clinical Anatomy and Family Medicine.

Part 1 – "types of knowledge" – Clinical Anatomy (Dr Rachel Alexander, Mr Hope Gangata):

Clinical anatomy is an example of a discipline that can be classified by me using the theory according to Biglan's quadrants as "hard" Natural Sciences / Application. Below is what is expected of students during the course of their studies.

What types of knowledge do you expect students to acquire during the course of studying clinical anatomy over the four semesters?

- Learn factual content – the paradigm of gross anatomy – the "what". There is a fixed, relatively stable body of factual information "out there" that a student needs to learn. **Questions:** Where does this knowledge come from? How stable is this body of knowledge? What does "factual" mean? – implies that it has a real basis to it?
- Demonstrate an understanding of the information – explain the "how", "the role of".
- Explain gross anatomy in terms of "process" – link the structure of a feature to its function, structure to functional processes within the body, gross anatomy to physiology. Understand how function determines structure. **Questions:** Explore the relationship between knowledge about structure and the knowledge about function. How are these different? Is this a matter of interpretation / theory, or is this also "factual"?
- Make links between words, diagrams, photographs, specimens, models and the dissected cadaver. **Questions:** What kind of knowledge are these models and diagrams? Does this require an understanding of relationships?
- Have an understanding of the "big picture" and the "little picture" – how an item being studied links to the functioning of the body as a whole.
- Link the gross anatomical structure with the knowledge of microscopic structure, acquired in histology and cell biology. **Question:** What kind of knowledge does this mean?

- Link the gross anatomical structure with developmental anatomy (embryology). **Question:** What kind of knowledge does this mean?
- Recall the information when required.
- Recognise, on specimens, structures that have been studied.
- Develop an understanding of structure at various levels – linking cells – tissues – organs – systems – the cadaver - living patients.
- Appropriate handling of human tissues – Human Tissues Act – ethics – professional behaviour in the dissection hall.
- Death & Dying – induction into the Medical profession.

Which learning processes do you expect students to master when studying clinical anatomy?

- Learning the factual content - many facts by rote learning; not to learn facts in isolation, but rather to understand the relations between the facts; grasp the meaning of the information. **Question:** What kind of knowledge does this mean?
- Explain the factual knowledge to another person in order to demonstrate understanding.
- During assessment events, show an understanding through description – both in written format and orally.
- Be able to correctly identify a structure when asked to do so.
- Read and understand text - the discourse in terms of gross anatomy and medical terminology.
- Be able to transfer the information being studied to what is being seen on specimens.
- Reflect on what is being observed.
- Be able to draw accurately – a correct representation of a structure, demonstrate understanding, make links to the theory.
- In order to gain an appreciation of a structure, students will move themselves, their hands and heads around the cadaver, and then lift the structure out of the cadaver and rotate it in space. (3-D thinking)
- Use a wide range of resources when studying – source them appropriately; condense them into learning material; construct tables, drawings, mind maps, flow charts, lists of key points; expand the knowledge base; use the notes later on for revision.

- Ensure retention of knowledge.
- Build on that knowledge – in depth, range of material, understanding and clinical application.

What types of skills do you expect students to master when studying clinical anatomy? These "types of skills" may also be a kind of knowledge, but of a practical nature – procedural knowledge which is premised on the kinds of knowledge required above, and cannot be separated from them. Procedural knowledge can only be observed if we know what to look for.

- Dissection skills and manual skills.
- Observational skills – recognition by recall, and being able to comment critically about the structure.
- Ability to transfer knowledge by making links across various disciplines, between gross anatomy and histology, structure and function, "normal" and "abnormal", and in the observation of a patient.
- Visuospatial skills – 3-D thinking – mental rotation of objects.
- Be able to work in a group – skills in communication, mastering the discourse, sharing knowledge, develop and demonstrate an understanding of the material, reveal and correct errors in their knowledge.
- Be able to find a wide range of resources, learn where and how to access resources, how to use resources, be critical of resources and use the appropriate ones.
- Trust what they are able to observe.
- Gain an understanding of human variation in structure.
- Listening skills – in various learning situations – whole class lectures, practical sessions, small group tutorials, problem-based learning sessions.
- Note taking in a variety of situations – see item above.
- Deductive reasoning begins to be learned in preparation for the diagnostic sciences and the clinical sciences.
- Composing an answer – developing writing skills, as well as the ability to organise knowledge and construct an answer.

How has the change from the traditional biological model of the Medical curriculum to the new biopsychosocial model affected the delivery of the Clinical Anatomy component of the course?

- There has been a dramatic reduction in content and in student contact time (halved) for Gross Anatomy – in order to accommodate the psychosocial aspects of the curriculum. Several workshops were held with staff involved in delivering all components of the curriculum, and the total number of notional hours was calculated. Based on this information, the total number of hours of student learning for Gross Anatomy was trimmed, in order to prevent the total number of hours for the MBChB curriculum from exceeding that set limit. (I think that it was set at 6 000 hours – will check with Vanessa Burch.) Staff involved in the delivery of the Gross Anatomy component were tasked to decide what is essential ("core") and what is beyond "core". The study of material that was labelled as beyond "core" was removed from the module. This process was repeated by all staff in all disciplines, and the final list of learning outcomes for the MBChB programme has been the focus of several workshops involving staff from the Basic, Diagnostic and Clinical Sciences.
- Only essentials ("core") are being taught – not the level of detailed delivered in the previous curriculum (deemed unnecessary).
- Systems-based approach is used, and not region-based anatomy, requiring a reordering of the material to be delivered in the module. **Question:** How does this change in sequence affect the knowledge describe above?
- Rewriting of the departmental dissector.
- Prescribing new text books.
- Far fewer lectures – PBL curricula are not lecture-driven. Lectures are one of several resources.
- Students still think that lectures provide the "clues" as to what will be examined in assessments - and assessments still drive the curriculum.
- Better use of design teams to design, deliver and review the curriculum, and set assessments as a group – collegiality. Open debate encouraged. Emphasis on clinical application – now need clinicians' input into Gross Anatomy.
- Better communication between staff members of various disciplines delivering the curriculum in each year (horizontal integration).

- Better communication between staff members of various disciplines delivering the curriculum in consecutive years (vertical integration).
- Spread of the delivery of the content over three years, and no longer compacted into one year.
- Integrated teaching – "normal" and "abnormal" and clinical application.
- Integrated assessments.
- No longer testing Gross Anatomy in the same amount of detail as in the previous curriculum – students are able to pass into subsequent years without a subminimum for any of the traditional disciplines. Do they still now their Basic Sciences and Diagnostic Sciences to the same degree as in the past?
- Huge increase in student contact time with respect to facilitating in PBL sessions.
- Attempts are made to contextualise every aspects of learning (every fact) – how it relates to the case being studied at the moment, to the Diagnostic Sciences, to clinical applications.
- Hopelessly overloaded curriculum – affects students' attitude to dissection (time consuming) and learning of Gross Anatomy (too much detail – learning a new language).
- Inclusion of staff in the Basic and Diagnostic Sciences in assessment events in the clinical years – revision of content from earlier years, the "physical presence" of those staff members at such assessments (a reminder of the relevance of the earlier material), possibility of extra tutorials in Year 5 (Obstetrics and Gynaecology?) - still under negotiation, additional commitment of student contact time is an issue.

<u>Part 2 – "types of knowledge" – Family Medicine:</u>

Family Medicine is an example of a discipline that can be classified by me using the theory according to Biglan's quadrants as "soft" Social Sciences / Application. Below is what is expected of students during the course of their studies. The interview was conducted with Dr Elma de Vries of Family Medicine. With the design and implementation of the new curriculum, and far greater emphasis is placed on the psychosocial areas of the patient than occurred in the traditional curriculum.

What types of knowledge (factual information and procedural skills) do you expect students to acquire during the course of studying Family Medicine during the six year programme?

Key concepts that emerged from this interview were that students need to have the following skills: "an understanding of", "be able to apply", "be able to communicate effectively", "have a commitment to", and "exercise clinical reasoning".

Based on the documented learning outcomes for Faculty, skills in the following areas were revealed:

- Understand and apply the principles of Family Medicine, as laid out in the Oxford Handbook of Clinical Medicine by M. Longmore, I. B. Wilkinson and S. Rajagopalan, Oxford University Press, 6th edition, 2004:

    1. "Decision and intervention are the essence of action; reflection and conjecture are the essence of thought; the essence of medicine is combining these realms of action and thought in the service of others."
    2. Do not blame the sick for being sick.
    3. If the patient's wishes are known, comply with them.
    4. Work for your patients, not for your consultant.
    5. Use ward rounds to boost your patient's morale, not your own.
    6. Treat the whole patient, not the disease – or the ward sister.
    7. Admit people – not syndromes.
    8. Spend time with the bereaved.
    9. Question your conscience – however strongly it tells you to act.
    10. The ward sister is usually right – respect her opinion.
    11. Be kind to yourself – you are not an inexhaustible resource.
    12. Give the patient and yourself time to ask questions, time to reflect, time to allow healing to take place, and time to gain autonomy.
    13. Give the patient the benefit of the doubt; if you can, be optimistic.

    Subsequent sections that are covered are entitled:

    1. Ideal and less than ideal methods of care.
    2. The bedside manner and communication skills.
    3. Asking questions.
    4. What is the mechanism? Finding narrative answers.
    5. Death: diagnosis and management.
    6. Facing death.

7. The art and science of diagnosing.
8. Prescribing drugs.
9. Prevention.
10. Is this drug any good? – analysis and meta-analysis.
11. Surviving house jobs.
12. Quality, Quality Adjusted Life Year, and the interpretation of dreams.
13. The inverse care law and distributive justice.
14. Psychiatry on medical and surgical wards.
15. The elderly patient in hospital.
16. On being busy.
17. Health and medical ethics.
18. Difficult patients.
19. Medicine, art and the humanities.

- Communicate effectively with team workers and with patients = communication skills.
- Be empathetic to a patient.
- Listening skills – particularly in history taking.
- Explain Medical discourse in layperson's terms.
- Practice health care reflectively.
- Understand and apply the principles of palliative medicine – the theory covered in BaDr, and practised within the community by working at a Hospice in Years 4 and 6.
- Understand medicolegal issues. (e.g. "sick notes")
- Understand the principles of prescribing drugs – linked to Pharmacology.
- Diagnose and manage common conditions – this moves into the area of "clinical reasoning" – thinking of the main possibilities of a clinical presentation, and then asking more focused questions.

- Seeking "cues" in history taking, the presenting symptoms of a patient, clinical signs upon examination of the patient, and the findings of special investigations – establishing the real reason why a patient has presented at a clinic. Listening skills are important.
- From the above, making the "3 stage assessment" – the biological, the psyche (mind, personal), and the social (family, workplace) contexts.
- Understand the ethics that are relevant to Family Medicine, as applied to a consultation – obtained by observation and practice in wards and at community hospitals – can only be assessed by observation by a supervisor – and feedback is given if a student is not behaving in an ethical way. Students need to have a conscience – these are the values that a student should in order to be selected for admission to the Medical programme. Medical ethics exists as a body of knowledge that needs to be studied, but should be inherent in students and developed, as they learn to be increasingly patient-centred in their approach.
- Have an understanding of and be committed to human rights issues.
- Assessments of students will include:
    1. Listening skills (e.g. history taking).
    2. Communication skills (e.g. history taking, treatment and management).
    3. Clinical reasoning ("putting everything together).
    4. 6th Year group project – problem solving via a quality-improvement project, group work, communication skills with fellow students, staff and patients.
    5. Observed performance at a community health centre.
    6. Practising evidence-based medicine – reading articles, applying that knowledge, and being assessed on that by a staff member who role-plays a clinical scenario.

Comment: These types of knowledge span the concepts of "knowing", "doing" (action) and "being". There is a body of factual information that needs to be mastered, such as learning about the South African Constitution, documentation around human rights, Government regulations about the termination of pregnancy, how to perform the three-stage assessment (biological, psychological/mind, social) in the biopsychosocial setting, pre- and post-testing counselling for HIV, and so forth. Then there are the procedural skills that are put into action, and the internalisation of these skills and philosophies in the "being" – all of which can only be assessed by continuous observation of the student in action (the "gaze"). This is where "knowledge codes" come into play.

Appendix 4: Chemical Pathology – list of core knowledge – Years 1-6

Examples from the document: **CHEMICAL PATHOLOGY CORE KNOWLEDGE LIST**

1. Disorders of water and sodium homeostasis

Must know	**Must recognise**
Mechanisms of water & sodium depletion Biochemical features of dehydration, sodium depletion	
Mechanisms of fluid overload, Biochemical features of water overload and sodium overload	
Difference between isotonic and hypotonic dehydration, in terms of clinical presentation and serum [Na]	Laboratory assessment of suspected SIADH

2. Disorders of potassium homeostasis

Mechanisms of regulation of potassium levels	
Biochemical features and consequences of hypokalaemia and hyperkalaemia	
Causes of hypo and hyperkalaemia	

3. Disorders of acid/base homeostasis

Mechanisms of regulation of acid-base homeostasis; Compensatory mechanism for acid-base disturbances	Common clinical conditions giving rise to metabolic or respiratory acidosis or alkalosis

Interpretation of blood gas results	
Buffer systems in blood and urine; Henderson-Hasselbalch equation	

4. Disorders of carbohydrate metabolism (diabetes and hypoglycaemia)

Physiology of insulin, counterregulatory hormones in fasting & fed state	Changes in carbohydrate metabolism in pregnancy
Basic pathophysiology of insulin resistance	
Differences & similarities of type 1 and 2 diabetes, aetiology, pathogenesis, characteristics, complications, diagnosis, treatment & monitoring	
Clinical & biochemical presentation & management principles of DKA, hyperosmolar non-ketotic coma and insulin-induced hypoglycaemia	
Mechanisms of hypoglycaemia in adults & children, Diagnostic approach	

5. Disorders of renal function (acute & chronic nephritis, nephrotic syndrome)

Physiology of renal regulation of water homeostasis, pH, electrolytes, nitrogenous waste & renal endocrine function	
Determination & definition of GFR using timed creatinine clearance	Estimation of GFR using formulae
Aetiology, biochemical diagnosis, metabolic consequences and management principles of	

acute & chronic renal failure	
Aetiology of the presentation & diagnosis of the nephritic and nephrotic syndromes	
Principles of laboratory testing in renal disease, urea, creatinine, electrolytes	

And so forth, for the remaining headings:

6. Disorders of liver function (jaundice, hepatitis, liver failure)

7. Pancreatic disease (acute & chronic pancreatitis)

8. Disorders of the gastrointestinal tract (peptic ulcer, malabsorption, diarrhoea)

9. Disorders of calcium and phosphate metabolism (rickets, hyperparathyroidism, bone disease)

10. Disorders of lipid metabolism (inherited and acquired)

11. Disorders of plasma proteins (hypoalbuminaemia, acute phase response, polyclonal vs monoclonal gammopathy)

12. Disorders of iron metabolism (iron deficiency and overload).

13. Disorders of vitamin metabolism (deficiencies and overload)

14. Endocrine disorders (hyper- and hypofunction of pituitary, adrenals, thyroid & gonads)

18. Tumour markers and metabolic effects of tumours

24. Diagnostic value of enzyme assays

31. Introduction to inherited metabolic disease, including porphyrias

32. Introduction to purine metabolism, uric acid and gout

33. Introduction to drug monitoring & toxicology, including alcohol, paracetamol and oganophosphate poisoning

34. Interpretation of test results (normal ranges, units, predictive value)

Appendix 5: Culture, Psyche and Illness – course documentation – Years 1-6

Quoting from the research proposal by Irlam *et al.* (2009) (page 3):

"Culture, Psyche and Illness (CPI) is a cross-disciplinary theme that encompasses the disciplines of psychology, psychiatry, social science, and medical anthropology. Cultural competence and the bio-psychosocial aspects of patient care are core components in medical education internationally, and are especially relevant in South Africa with its diversity of language, customs, belief systems, and family structures. Disease and illness has culturally-prescribed patterns of presentation, interpretation, and treatment. Biomedicine too is culturally prescribed in terms of communication, behaviour and roles.

Students are taught by means of problem-based learning (PBL) to integrate their understanding of a patient's cultural context, psychological wellbeing, and social circumstances, with reflection on their own culture and the biomedical culture, to arrive at a comprehensive analysis of the patient's illness. During the first three years of the curriculum, students discuss case scenarios in PBL group sessions, and undergo portfolio-based formative assessments that have been designed by a multi-disciplinary team. They learn professional communication and writing skills, the anthropological skills of observation and analysis, and how to incorporate their own diversity into the learning process.

The theme of CPI is carried through to the clinical context by means of ward rounds with a medical anthropologist in the fourth year General Medicine block. Students are required to interview selected medical patients and discuss their insights into the biopsychosocial history and cultural context of their patients in group seminars with their peers and the medical anthropologist. These seminars encourage the assimilation of prior learning of social science and psychological theory.

Students' case reports on the clinical relevance of the PHC principles are assessed by means of an annual multi-disciplinary portfolio (MDP) exam at the end of their fourth year. Long term learning outcomes that require evaluation include sound engagement with patients and their families, effective multi-professional teamwork, and well co-ordinated pathways to care."

<u>The golden thread in Culture and the Bio-psychosocial curriculum:</u>

Addressing the cultural and linguistic diversity of the students themselves and teaching them to embrace this perspective in their Medical programme – embracing a more meaningful linguistic and cultural interpretation of medicine and their patients. Culture has its own and important theoretical domain in Medical Anthropology and practice in Clinical Anthropology and cross-cultural Psychiatry. Languages to be taught at the bedside and in the clinical setting.

The course documentation for Year 1 lays the foundations for the content covered in future years.

<u>Quoting from course documentation specifically for Years 2 and 3</u>:

Excerpt from an Introduction to CPI, as placed on VULA for all students in Years 2 and 3, January, 2010.

This document serves to introduce the Culture, Psyche and Illness thread by clarifying the objectives, the educational strategies and assessment approach of this component of your MBChB course.

The curriculum learning objectives for CPI as defined by faculty:

- To understand the bio-psycho-social aspects of health
- To understand the influence of culture on health
- To understand concepts in medical anthropology
- To understand human behaviour
- To understand human rights and ethics
- To understand the role of complementary, informal and traditional health practices
- To communicate effectively
- To practice reflectively

List of learning outcomes for CPI:

Comment: the sequence of delivery of the 20 PBL cases has altered in recent years, but the core content has not been affected by this change.

Case 1: Boil (skin)

List the psychosocial consequences of having a boil, and identify subjective norms, stigmas and impact on lifestyle

Case 2: Back pain

Identify the psychosocial effects of back pain, including impairment and disability

Case 3: Rheumatic Fever (heart disease)

Discuss the psychosocial impact of chronic illness on both the child and the family with specific reference to heart disease.

Discuss the life stage tasks of childhood

Case 4: Myocardial infarction

Explain, using myocardial infarction as an example, how individuals cope with a life-threatening event.

Understand what is meant by the psychosocial concept of anxiety

Case 5: Acute glomerulonephritis (renal system)

Explore the benefits and hazards of traditional medicines

Case 6: Asthma

Life stage tasks of adolescence

Describe the life stage tasks of adolescence and their development

Investigate risk-taking behaviour of adolescents, what role does peer pressure play

Discuss the psychosocial effects of chronic illness on adolescents

Discuss how adolescent identity issues are affected by chronic illness

Case 7: Tuberculosis - pneumonia

Understand the role of stigma and community explanations about TB in patient care and treatment

Understand the process of cognitive development in a young child

Case 8: HIV/AIDS

Belief systems around HIV, stigma and discrimination, sexual health practices

To appreciate the role of advocacy to prevent discrimination against people with HIV

To understand the role of gender in increasing vulnerability to HIV

To understand the role of pre- and post-testing counselling for HIV

Understand the part that sexual practices, stigma and cultural attitude play in persons and communities that are vulnerable to HIV

Case 9: Diarrhoea

Understand how traditional medicine was used to cure Nolitha

Case 10: Hepatitis

Discuss how cultural beliefs about the use of alcohol affect people's health

Case 11: Anaemia

Understand the concept of depression

Have a concept of the cultural and social factors (norms, values, attitudes) that may influence dietary restrictions

Case 12: Neoplasia – male reproductive system

Explore the differing cultural and religious beliefs around male sexuality in this age group

Describe the mid-life tasks of a man in Mr Romano's age group

Describe the different individual responses to the fear of cancer

Describe the basic psychological concepts involved in erectile dysfunction

Case 13: Neoplasia – female reproductive system

Culture in palliative care

Discuss the influence of a terminal illness on a health worker

Appreciate the role of spirituality as an aspect of palliative care

Sexually transmitted infections – counselling

Appreciate the role of culture in palliative care

Case 14: Leukaemia - childhood

Access information about support groups

Discuss the different issues a family faces in coping with a child with a potential terminal illness

Case 15: Diabetes Mellitus Type 1 – childhood

Kinship

Understand the concept of enuresis (bedwetting)

Understand the concept of delirium

Understand how kinship, culture and belief systems with specific reference to Hindu Caste Systems affect the well-being of the individual and his or her family

Case 16: Diabetes Mellitus Type 2 – adult; postmenopausal woman

Smoking legislation – understand the role of pricing in shaping consumer behaviour

Describe how family members and the community can contribute to glucose control and a reduction in the risk of the complications of diabetes

Understand the impact of obesity on health in general, and diabetes in particular

Gender, menopause, culture – describe the developmental tasks for women in later middle life and understand how cultures differ in their perceptions of both women's health and menopause

Case 17: Neural tube defect

Counselling re termination of pregnancy

Staff support and counselling – understand how cultural and religious beliefs and concepts may differ from biomedical ones with regard to life formation and pregnancy

Understand the importance of staff support and counselling in this case

Case 18: Tuberculosis - meningitis

Community explanations of illness, cognitive development

Understand the process of cognitive development in a young child

Case 19: "Stroke" (cerebral vascular accident)

Family distress and counselling

Changes to self – physical and psychological

List the organic causes of changes in mood states

Case 20: Foetal Alcohol Effect / Syndrome

Quality of parenting

Discuss domestic violence

Outline the aetiology of alcoholism

Describe FAS – phenotype, neuropsychiatric developmental problems

Outline the principles of the management of substance abuse – as broad as possible – psychosocial aspects

<u>Course documentation for Years 4-6:</u>

Demonstrate bio-psychosocial-cultural sensitivity towards the patient / client in the clinical setting

Describe in detail the bio-psychosocial world and culture of the patient:

Demography – family, kinship, support system, work, language, religion, culture

Geography – home, area of residence, locality, history of migration

Individuality / description – basic description of patient as presented – appearance, dress, bodily and psychological disposition, attitude, behaviour

Describe in detail the treatment experience of the patient and his/her family:

> Patient and family experience of language sensitivity, clear explanation of diagnosis / prognosis, care from nurses, doctors, perceived success / failure of treatment, attitudes of health care workers, expectations, cultural difference or sensitivity

Make a diagnosis and three-stage (bio-psychosocial-cultural) assessment:

> Patient diagnosis and prognosis described and evaluated in terms of the limitations and benefits the patient will experience in terms of family and cultural background

Needs of special groups

Rural health care

Understand human behaviour and the concepts of health promotion and education – focus on disease

Understand the role of complementary, informal and traditional health practices in South Africa – integration into health system; PHC principles in relation to traditional healing practices, and health promotion in respect of equity, referrals, cultural and human rights, evidence-based medicine

Own vulnerability, e.g. needle stick injuries

Dealing with death and dying

Self-awareness

Caring for the care-givers – burnout, self-care

Dealing with mistakes – own and others

Recognising own limits; asking for help

Family systems theory

The role of medical anthropology in the clinical and community context

Medical anthropology in relation to Primary Health Care principles and health promotion

Clinical and community competence in identifying and understanding cultural, bio-psychosocial and psychosocial factors in the patient

Clinical and community competence in identifying and understanding how culture and bio-psychosocial and psychosocial factors determine and influence the presentation of illness and disease

Clinical awareness of biomedical culture and the roles of culture and diversity within the health system

Culture and bio-psychosocial in relation to the PHC principles of equity, referrals in integrated pathways to care, evidence-based medicine, health promotion, multi-disciplinary team work

Applied cultural skills and competency in patient care and community liaison

Appendix 6: Raw data for Chemical Pathology and Culture Psyche & Illness

List of terms indicating types of knowledge and skills required

Sources: Faculty document of "core" knowledge and skills, and grids used for planning the delivery of the subject across the MBChB programme.

Culture, Psyche and Illness:

Adjustment

Affected (by)

Ageing

Aetiology (of health and disease; alcoholism)

Attachment

Awareness

Background

Behaviour (self; risk)

Beliefs (belief systems)

Benefits (of)

Care (during childbirth; postnatal; palliative); caring for

Causes (of stress)

Changes (psychosocial; in roles and responsibilities)

Clinical setting

Competence

Concepts (in medical anthropology; of health promotion; gender; milestones; anxiety)

Conditions (illness)

Consequences (of)

Contribute (to)

Consumption (theory of)

Coping (with)

Counselling

Culture

Dealing (with death and dying; mistakes)

Definitions (biological and psychological)

Development (of infant; childhood; romantic relationships; sexual identity; cognitive)

Discrimination

Disability

Diversity

Dysfunction

Effects (on the adolescent; of pain)

Experience (pregnancy; paternal; midlife transitions; of the patient)

Explanations (of)

Factors (shaping identity; for development)

Feeling fulfilled

Forms (of healing)

Hazards (of)

Identify

Identity (gender, self, social, etc)

Impact (on health; lifestyle; obesity)

Impairment

Influence (of class, culture, religion, etc); influencing decisions

Information (access information on)

Integration (into health system)

Interpretation (linguistic and cultural)

Issues (cross-cultural)

Limitations

Loss

Markers (of transition; of adulthood)

Models (of health)

Mortality

Needs (of special groups)

Norms

Perceptions (of ageing; women's health; menopause; success/failure)

Play (the part that practices play in)

Practices (health; culture; child-rearing; sexual)

Principles (PHC)

Process (of development of)

Promoting (healthy pregnancy)

Quality (of parenting)

Relate (practices that relate to); in relation to; the relationship between

Religion

Responses (to)

Responsibilities (parenthood)

Rites of passage

Role (of various health practices; gender; parenthood; peer pressure; advocacy)

Self-awareness

Sensitivity (demonstrate in a clinical setting)

Shaping (body image)

Skills (applied cultural)

Spirituality

Stigmas

Stressors

Structures (family)

Styles (parenting)

Support (staff; groups)

Symptoms (of stress)

Syndrome (empty nest)

Tasks (life stages)

Theories (of development of)

Transition (to parenthood; to independence)

Understanding (of)

Value (in health)

Variations (of experience)

Vulnerability

Ways (of coping)

Well-being; wellness

Work

Chemical Pathology:

Actions (of)

Aetiology

Analytical (preanalytical; postanalytical)

Assessment (of)

Balance

Causes

Changes (in test values)

Characteristics

Classes (of); classification

Composition

Confirmation

Consequences

Definition (of)

Derangement

Determination (of)

Diagnosis

Differences

Disorders

Distribution (normal; effects on)

Effects (of)

Evaluation (of)

Factors (risk)

Features

Functions (liver)

Indications (for)

Interpretation (of)

Investigations (laboratory)

Involvement (in)

Leading (to)

Marker

Measuring

Mechanisms

Monitoring

Origin

Pathway

Predictive values

Products (of secretion); production

Presentation (clinical and biochemical)

Principles (management)

Prognosis

Properties

Recognising

Regulation

Relationship (to normal physiology and disease)

Relevance

Results (test)

Roles (in function)

Screening

Similarities

Situations (clinical)

Sources (of error)

Structures

Syndrome

Testing (laboratory); tests

Therapy

Types (of products)

Uses

Values (test)

Variables

Work-up (for)

Completed table of terms indicating types of knowledge required

Source: Interviews with colleagues involved in the design and delivery of the subjects chosen from the MBChB programme.

Knower - Specialist	*Colleague 1* **Chemical Pathology**	*Colleague 2* **Chemical Pathology**	*Colleague 3* **Psychiatry**	*Colleague 4* **Medical Anthropology**
ER+ (+C, +F)	Medically qualified, specialised Head of Department Managerial work Clinical problem solving Devise action plan	Medically qualified, specialised Managerial work Interface between basic sciences and practice of medicine Research Business men (private) Teaching Offer good service Repertoire of tests Turn-around time of tests Journal clubs Diagnostic services	Medically qualified, specialised Well trained Well informed Strict diagnostician Research minded Act on committees	Study of anthropology Ethical boundaries of patient confidentiality Making detailed notes
ER- (-C, -F)	Apply knowledge in variety of situations		Barriers present but becoming more permeable	Lateral thinking across silos of knowledge Interacting with patients & clinicians
SR+ (+C, +F)	Serving needs of users Collaborative work Personality	Educating GPs or Specialists Interact with other clinical specialities Bridge between	Multidisciplinary team Therapeutic relationship with patient	Critique of medicine Context dependent Exploring new paradigms Observing

	dependent Enquiring mind Passing on knowledge to others Interaction with patients Ward rounds People management	Specialists Research orientated In-depth knowledge Systematic approach Scientific curiosity Critical of literature Identify interesting fields of research where results of value Collaborative research Open mind	Kind Sympathetic Understanding Empathetic Generous Critical of themselves Maintain balance between supportive & understanding but also confront patients Self-confidence Humble Critical thinker Teaching skills Mindful of social context Enjoy your job Not preoccupied with ills of world Switch off Fascination with human condition Mindful of complexity of humans & situations Wonder at human spirit Put things in perspective Understand how things fit into patient & society	Integrating Interpreting Reflection Engaging Ethically responsible

			Particular person influencing what is put into curriculum	
SR- (-C, -F)				Exploring body beyond normal boundaries

Knower – discipline	*Colleague 1* **Chemical Pathology**	*Colleague 2* **Chemical Pathology**	*Colleague 3* **Psychiatry**	*Colleague 4* **Medical Anthropology**
ER+ (+C, +F)	College examinations HPCSA accreditation Guild of Specialists Laboratory information systems Technology – tests & results – quantitative Changing knowledge & technology Understanding mechanisms of disease Measuring substances Interpreting laboratory results	Higher institution College of Specialists Guild of Specialists Old info changes New info out there New fields arise Consensus National body Some facts do not change New subjects evolve Managerial work Accreditation Standard operating procedures Administration Mechanisms of disease Global principles & local context Dealing with numbers	University College Postgraduate Committee Association of Psychiatrists Basic knowledge does not change Change driven by research Hard core psychiatric knowledge Role of culture in development, maintenance & cure of illness Biomedical, biochemical, physical causes of pain Relationships,	Darwinism Primitivism Embedded disciplinary knowledge Physiology Biology Psychology Social science Life stage development Community based disease Pathology Identity Stigma Stresses Ageing Culture & community Public health Family medicine Primary health care

	Drawing conclusions Financial management	Quantitative Scientific methods Measuring Draw conclusions Make comparisons	influences, interactions, changes, consequences, between 2 parties Hard core definitions in social anthropology – culture, race, kinship Doctor / patient relationship Common psychiatric disorders – how presents, how treated, formulate management plan, involve patient	Biopsychosocial Prior knowledge Theory Precepts Concepts Theoretical & practical knowledge
ER- (-C, -F)	Collaborative work Different clinical situations (transferable knowledge)	Advising clinical colleagues Educating GPs or Specialists Interact with other clinical specialities Bridge between Specialists Broad overview	Generic principles applied everywhere	Academic freedom
SR+ (+C, +F)	Technology – tests & results – qualitative People management	Content determined by personality of person in charge Differences in philosophy Boundaries between	Learning more about human conditions Context specific principles Social anthropology	Social science Life stage development Community based disease Identity

		disciplines are arbitrary & traditional	Role of culture in development, maintenance & cure of illness Particular person influencing what is put into curriculum Negotiation of topics Socio-political climate of RSA Cultural (+ religious), socio-political & socio-economic aspects Impact of physical illness on community & family	Stigma Stresses Ageing Culture & community Public health Family medicine Primary health care PHC principles –>> equity, referral, multidisciplinary team, evidence, culture, health promotion Biopsychosocial What sickness means Role of culture in human development Individual level Population level Gap in knowledge between medical culture & patient culture How people understand themselves to be Behaviour Ideological changes Shifts in patterns of disease in community Shifts in cultural behaviour
SR- (-C, -F)				Academic freedom

Knower - student	*Colleague 1* **Chemical Pathology**	*Colleague 2* **Chemical Pathology**	*Colleague 3* **Psychiatry**	*Colleague 4* **Medical Anthropology**
ER+ (+C, +F)	Emphasising more relevant things "Core" document – must know vs. must recognise & refer Common conditions Less complicated conditions Chem Path textbooks Physiological responses Measuring alterations Compensation / decompensation Qualitative / quantitative tests Cause & effect Predictable Homeostasis Balance Normal state Understanding basic sciences, biochemistry, physiology	Use diagnostic tests rationally Understand tests Interpret results Understand mechanism of disease Biochemical derangements Apply in medical diagnosis Patient management Understand underlying basis for symptoms, signs, & abnormal test results Simple facts Diagnostic tests Physiology gone wrong Changes in values (test results) Ward rounds	Know hard core facts (psychiatry) Know hard core definitions in social anthropology – culture, race, kinship Understand role of culture in development, maintenance & cure of illness Understanding of doctor / patient relationship Informed about common psychiatric disorders – how presents, how treated, formulate management plan, involve patient Competence – having knowledge& putting into practice	Preclinical / clinical Have foundation knowledge Define Categorise Stipulate Build up information Medical diagnosis Be discriminating Distinguish Discern what is relevant Understand technology Understand remodelling of systems Better honed research skills
ER-				Comment when it is

(-C, -F)				valuable Rework concepts Judge critically Medical diagnosis Evaluate Be discriminating Distinguish Discern what is relevant
SR+ (+C, +F)			Understand role of culture in development, maintenance & cure of illness Understanding of socio-political climate of RSA Social status Access to health care Own unique understanding of why you become ill Religious aspects Understand culture, socio-political & socio-economic aspects Understand impact of physical illness on community & family Understand how	Judge critically Judge difference Reflect Consider Medical diagnosis Evaluate Distinguish Discern what is relevant Understand the thinking that goes on in humanities

			family & community contribute to genesis, presentation, cure & prevention of illness Form therapeutic relationship with patient from widely divergent class & culture from student's own Be aware of own prejudice Learn to be humble Be honest in understanding of others' culture, race, creed, religion Show respect for different belief systems Understand why people may view me differently – what patient is thinking of me Understanding of doctor / patient relationship Be aware of what knowledge & putting it into practice does to	

			your being & way manage situations	
SR- (-C, -F)				

Appendix 7: Knowing, Acting and Being

Barnett and Coate (2005) suggest three domains which form the basis of discussions about curricula, namely *knowing, acting* and *being*. These three domains are used by them to provide a frame through which to understand and communicate different patterns of curricula across disciplines, courses and curricula.

- Knowing – episteme – knowledge is active, dynamic and socially developed – requires a will to acquire and own – a personal act of engagement between the student and the intellectual field in question.
- Acting – praxis – becoming engaged in action and thus developing skills – becoming increasingly important in education – emancipates.
- Being – ontology – self-identification – the types of qualities listed are: self, being, becoming, capacity, self-realisation, self-confidence, self-understanding, self-reliance. (The concept of Being opens up discussions about selection criteria for students, and the recognition of the potential to develop certain traits that will result in the success of a professional.)

The initial important component is the knowing. Knowing is affected by external and internal influences on levels that are local, national, and global. Knowing includes past and present experiences, and is a process of looking to the future. The context and the skills may be specific and generic, but generic skills may well be applied in specific situations (action). The process will either endorse or will question the *status quo*. The examination of knowledge has shifted from exploring the "truth" to looking at what is "used", with an emphasis on action, and experiential learning is now part of the curriculum.

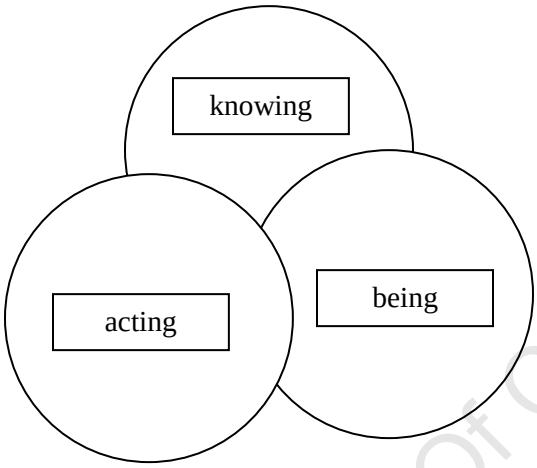
Acting emphasises skills that are appropriate for the profession. Learning used to be by osmosis, but now the learning is outcomes-based. Skills, which are a combination of knowledge and of self-identity, need to be assessed, and the authors acknowledge that skills are difficult to transfer, both to someone else as well as to a different situation (*id est*, the transfer of knowledge and skills).

Being involves learning how to learn, and examples of such learning are a journal of reflection on learning and assessing the value of activities.

The authors pose the question, "What are the challenges of a changing world?". They propose that a changing world does not rule out knowledge but poses questions about what kinds of knowledge are going to be fruitful in a changing world (the knowing). They emphasise how difficult it is to act in a changing world, because of the multiple frames of reference that have to be dealt with (the acting). There

is a call for certain kinds of human capacity and dispositions, and for self-awareness and self-confidence (the being).

The scheme that Barnett and Coate use is represented by the curriculum lying centrally, with three circles representing knowing, acting and being interacting to a greater or lesser degree with one another, and the relative sizes of each of the circles vary according to which is the more dominant component of that curriculum. They use this scheme to illustrate curricula in Arts and Humanities, in Sciences and Technologies, and in professional subjects.



The order of size of circles, from large to small:

Arts & Humanities:

knowing > being > acting

Science & Technology:

knowing > acting > being

Knowing is a personal act that requires a calling for will, an act of identity, and a claim for ownership. A knowing is a personal relationship between the person and the intellectual field in question, requiring collective engagement between students.

Action, they state, is a necessary component of a degree course, and may be expressed as overt action (as in the performing arts or in the medical and health professions) or may be more hidden and more distinctly a purely personal matter (as in acquiring the skills intimately associated with a discipline). Action, therefore, requires that a student not only acts, but also engages. Initially, this action may be modelled on the actions of others positioned around a student, but eventually becomes unique to the student – authentic and first-hand. This is where a student acquires the skills of the profession to the highest degree.

Being encompasses terms that relate to "self", "of being" and "of becoming". Similar terms are "capability", "self-realisation", "self-confidence", "self-understanding" and "self-reliance" – the

development of the inner self. All three of these building blocks need to be used within the curriculum, and their development within students needs to be taken seriously by educators.

Finally, the interlocking circles of *knowing*, *acting* and *being* were prepared. As reported in earlier chapters, Barnett and Coate (2005) write extensively about nine zones of influence that seem to act upon patterns of curricular change (quoting Barnett, 2000), and they used this information to classify the three models. Barnett and Coate proposed the model for each of Arts & humanities: knowing > being > acting, Science & technology: knowing > acting > being, and Professional subjects: acting > knowing = being.

Based on the diagrams drawn by the four staff members for various aspects of their field, the analysis revealed the following:

Chemical Pathology – staff member number 1:

The Specialist:

The interviewee emphasised that the Specialist needs to have equally valued qualities of knowing and acting, since he needs to have mastered the background knowledge fully, and must have all the skills to apply that knowledge in a laboratory and clinical setting. Being is less valued in this situation.

knowing = acting > being

The discipline:

A similar scenario exists for the discipline in which the Specialist is working.

knowing = acting > being

The course for the undergraduate student:

The interviewee feels that the undergraduate student first needs to master the body of knowledge, and then needs to acquire the skills to apply that knowledge, and that the being is not relevant here. So the sizes of the respective circles indicating what is valued are determined by a temporal reality – the degree of value will change over time.

knowing > acting > being

One can see that this is an exact fit for Barnett and Coate's "Science and Technology" category.

Chemical Pathology – staff member number 2:

The Specialist:

The interviewee is of the opinion that all three categories are equally valued when it comes to the Specialist. This concurs with the opinion of the first interviewee, but the being is given greater value here, because, in the view of this staff member, it is a reflection of the way he, personally, is.

knowing = acting = being

The discipline:

The interviewee is, quite independently, of a similar opinion to the staff member questioned above, in that acquiring the knowledge is equally important to being able to apply it in a laboratory and clinical setting, and that the being is less valued when it comes to the discipline.

knowing = acting > being

The course for the undergraduate student:

The interviewee stated that students first need to master the body of knowledge, and then they will learn how to apply that knowledge in a range of situations, and that the being is less valued. He feels that a student cannot make progress in this subject unless she first learns all the material, and then learns the skills of application. He explained that one cannot apply anything unless you have the knowledge first. He thinks that his role is not to address the being of a student – "you are either born with it or not" – and expanded this to any of the "science" subjects, and stated that it was different for something such as Religious Studies.

knowing > acting > being

Psychiatry:

The interviewee compared the three areas of knowing, acting and being with terminology that is used in Psychiatry, namely knowledge, skills and attitude.

The Specialist:

The interviewee is of the opinion that all three circles will be of the same size, since all are equally valued when it comes to the Specialist in Psychiatry. Mastering the knowledge, having the skills of application and "the type of person you are" are all equivalent in value if you want to be a success in this field.

being = knowing = acting

The discipline:

Again, he feels that all three areas are equally valued in Psychiatry, based on his views reflected above. He did add, though, that some of his colleagues will disagree with him, and would state that possession of the knowledge and being able to apply that knowledge both outweigh the value given to the being when it comes to the discipline.

knowing = acting = being

(other colleagues: knowing = acting > being

The course for the undergraduate student:

Based on the arguments above, he came to similar conclusions for the undergraduate student, namely that all areas are of equal value when studying the Psychiatry component of Culture, Psyche and Illness. He acknowledged that he feels that the being is the really important one of the three circles, and that he spent more time on this area during the course of his interview. He was in two minds as to whether to make being the most valued, because this reflects his personal views more accurately.

knowing = acting = being

(what he tried to imply: being > knowing = acting)

The interviewee stated that he feels as if he was "sitting on the fence" but making all three categories of equal value each time, but the researcher explained to him that this was not a reflection of being indecisive, but rather a statement that all three aspects are of equal value in this subject area.

Medical Anthropology:

The Specialist:

The interviewee stated that the being is more valued in this speciality, highlighting the importance of the qualities of the person above the areas of knowing and acting. For the Specialist, mastering the body of knowledge and being able to apply that knowledge in clinical settings are equally valued.

being > knowing = acting

The discipline:

Medical Anthropology as a discipline values the acquisition of knowledge greatly, followed by valuing the type of person that one is, and thereafter the skills of applying that knowledge.

knowing > being > acting

The course for the undergraduate student:

The interviewee divided the MBChB programme into the first three years (see references to "preclinical", earlier) and the latter three years (see her references to "clinical"). For the first three years, acquiring the knowledge is of prime importance, followed by being able to apply that knowledge in a practical way, followed by the personal traits of the student. For the latter three years of the programme, the skills of application are most valued, followed by the knowing, and finally the personal traits of the student.

Years 1-3: knowing > acting > being

Years 4-6: acting > knowing > being

The classification by the interviewee for the first three years of the programme matches Barnett and Coate's depiction for Science and Technology, and the classification for the latter three years matches the example for Humanities. This presents an interesting switch in what is valued between the more junior student and the more senior student.

The analysis of the data, as done by the researcher, led to interlocking circles that showed the following trends, based on an assessment of the number of items that were discussed during the course of the interviews:

Chemical Pathology – staff member number 1:

The Specialist:

knowing = acting = being; future is being > knowing = acting

In this case, the staff members was describing the changing role of the Specialist, in that registrars and Specialists will be encouraged to play a different role in the future, when it comes to ward rounds and so forth. His analysis of the current situation, in the section above, does not reflect the future or what is practised in other countries.

The discipline:

knowing = acting > being

This matched exactly with what the interviewee drew himself.

The course for the undergraduate student:

knowing = acting

The being was absent in the interview here, although the staff member did include that aspect in his depiction, because he was specifically asked to place that category in order. This verifies the fact that the personal traits of the individual are the less valued of the three areas under discussion.

Chemical Pathology – staff member number 2:

The Specialist:

knowing = acting = being

This matched exactly with what the interviewee drew himself.

The discipline:

knowing = acting > being

This matched exactly with what the interviewee drew himself, and is an area of agreement between both staff members in this field.

The course for the undergraduate student:

knowing = acting

Once again, the being was absent in the interview here, although the staff member did include that aspect in his depiction, because he was specifically asked to place that category in order. This verifies the fact that the personal traits of the individual are the less valued of the three areas under discussion.

Psychiatry:

The Specialist:

being > knowing = acting

The reason being appears as an area that is more valued here is because the interviewee spent more time talking about this than the other areas. As discussed above, the interviewee is of the opinion that all three areas are equally valued, but spent more time on the personal traits of the practitioner.

The discipline:

knowing = acting > being

The reason being appears as an area that is less valued here is because the interviewee spent more time talking about this than the other areas. As discussed above, the interviewee is of the opinion that all three areas are equally valued, but spent less time on the personal traits of the practitioner, when talking about the discipline of Psychiatry.

The course for the undergraduate student:

being > knowing = acting

In the analysis of the interview, above, this is what the interviewee implied, yet chose rather to make the three circles of equal value when he drew them, but he spent more time itemising and discussing the personal traits of the student.

Medical Anthropology:

The Specialist:

being > knowing = acting

This matched exactly with what the interviewee drew herself.

The discipline:

knowing = acting = being

This does not match what the interviewee drew herself, as her interpretation was that Medical Anthropology as a discipline values the acquisition of knowledge greatly, followed by valuing the type of person that one is, and thereafter the skills of applying that knowledge, creating the drawing: knowing > being > acting..

The course for the undergraduate student:

knowing = acting > being

If one considers the interplay of knowing and acting in the early versus the later years of the programme, as described by the staff member, namely:

Years 1-3: knowing > acting > being

Years 4-6: acting > knowing > being

then this does match overall with what the interviewee drew herself.

Barnett and Coate (2005) decided that, for each of the three fields, the following emerged:

Arts and humanities:

knowing > being > acting

Science & technology:

knowing > acting > being

Professional subjects:

acting > knowing = being

This study revealed the following picture for the undergraduate subject area:

Chemical Pathology:

knowing = acting (interviews) and knowing = acting > being (drawings by staff members, where they were asked specifically to place being in the drawing)

Psychiatry:

being > (or =) knowing = acting

Medical Anthropology:

knowing = acting > being (one could argue that a combination of the staff member's depiction of Years 1-3: knowing > acting > being and Years 4-6: acting > knowing > being comes to this result, overall, timing making the difference across the years)

This shows that Chemical Pathology and Medical Anthropology fall under a fairly similar classification as Barnett and Coats's model had for "Science and technology", except that these two subjects value *knowing* and *acting* equally. This is a good reflection of the essence of Chemical Pathology and Medical Anthropology, as both rely heavily on the possession of sound knowledge and being able to apply that knowledge (whether it be laboratory investigations and their interpretation, or the principles of social anthropology). The one difference is that *being* does not feature at all for Chemical Pathology, indicating that no attention is actively given to the "person" at undergraduate level in the teaching by staff members. Psychiatry is the only subject where *being* emerges as the most important aspect of the model, and this subject does not fit any of the categories offered as examples by Barnett and Coate. The closest Psychiatry comes to any of the three examples is Professional subjects, but the latter do not actually value *being* as greatest.

Appendix 8: Letter to each of the interviewees regarding the Analysis chapter

Please see next page.

UNIVERSITY OF CAPE TOWN

FACULTY OF HEALTH SCIENCES

Prof GJ Louw

Department of Human Biology

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Graham.Louw@uct.ac.za

9th February, 2010

Master's thesis (Higher Education Studies)* - *Analysis chapter

Dear (colleague),

Attached, please find a hard copy of the Analysis chapter of my thesis. This thesis is now in its final "draft" version, awaiting approval from my supervisor and then going off to a proofreader. I intend submitting in about a month or so, for assessment.

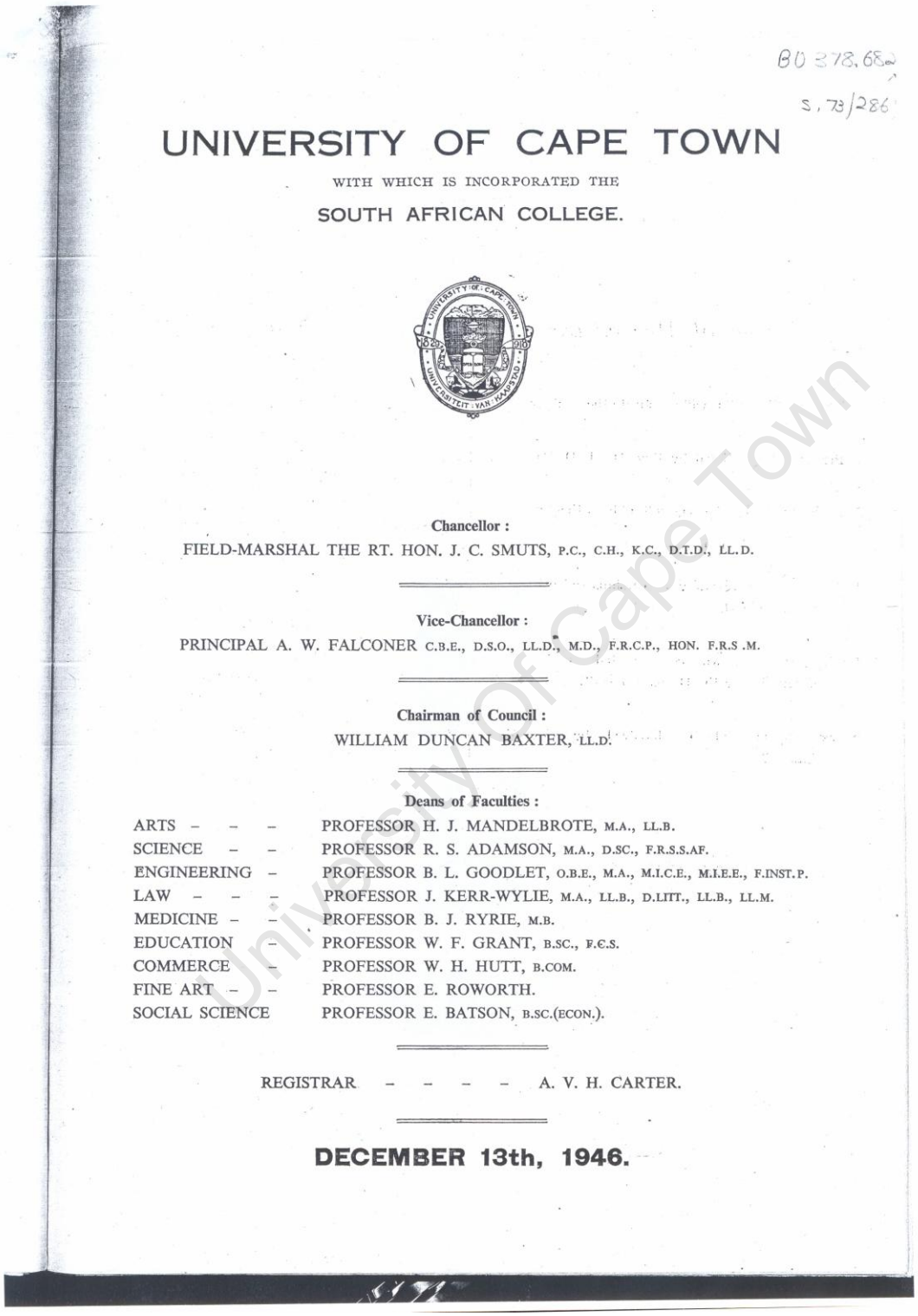
As agreed when I interviewed you, I would give you a copy of the analysis of the data that I gathered during our interview. Much of the chapter deals with other disciplines, and the analysis of course documentation, which you may choose to skip over. The data that relates to our two interviews appears under the sections on Medical Anthropology – the Specialist, the discipline, and CPI - the undergraduate course; you are Interviewee 4.

If you want to provide me with feedback, I will very happily discuss this with you, either over the 'phone or in your office. It may be that you need some contextualisation of my findings. I would need at ask that any feedback reach me by Friday 19th February, 2010, so that I can consider in what ways to make any changes, if necessary.

With best wishes, and many thanks for your kindness in providing me with an opportunity to interview you,

Graham

Appendix 9: Graduation ceremony for Ms S Dodd, 1946



UNIVERSITY OF CAPE TOWN

WITH WHICH IS INCORPORATED THE

SOUTH AFRICAN COLLEGE.

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FIELD-MARSHAL THE RT. HON. J. C. SMUTS, P.C., C.H., K.C., D.T.D., LL.D.

Vice-Chancellor :

PRINCIPAL A. W. FALCONER C.B.E., D.S.O., LL.D., M.D., F.R.C.P., HON. F.R.S.M.

Chairman of Council :

WILLIAM DUNCAN BAXTER, LL.D.

Deans of Faculties :

ARTS – – –	PROFESSOR H. J. MANDELBROTE, M.A., LL.B.
SCIENCE – –	PROFESSOR R. S. ADAMSON, M.A., D.SC., F.R.S.S.AF.
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MEDICINE – –	PROFESSOR B. J. RYRIE, M.B.
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COMMERCE –	PROFESSOR W. H. HUTT, B.COM.
FINE ART – –	PROFESSOR E. ROWORTH.
SOCIAL SCIENCE	PROFESSOR E. BATSON, B.SC.(ECON.).

REGISTRAR – – – – A. V. H. CARTER.

DECEMBER 13th, 1946.

Order of Procedure

1. The Vice-Chancellor will constitute the congregation.
2. Prayer will be offered by Rev. Dr. J. D. Conradie.
3. Professor R. S. Adamson will address the congregation.
4. The award of University scholarships and prizes will be announced.
5. The Graduands will be presented to the Vice-Chancellor by the Deans of Faculties.
6. Congregation will be dissolved by the Vice Chancellor.

Program

1. Die kongregasie word deur die visekanselier gekonstitueer.
2. Gebed deur wel. dr. J. D. Conradie.
3. Toespraak deur professor R. S. Adamson.
4. Bekendmaking van die toekenning van Universiteitsbeurse en pryse.
5. Graduande word aan die visekanselier deur die fakulteitsdekane voorgestel.
6. Ontbinding van die kongregasie deur die visekanselier.

GOD SAVE THE KING

Names of Graduands.

An asterisk * denotes that the degree will be conferred *in absentia*.

I. Faculty of Arts.

Dean: Professor H. J. Mandelbrote.

Degree of Doctor of Philosophy.

*Thelma Gutsche, M.A. (Subject of Thesis: "The History and Social Significance of the Cinema in South Africa, 1895-1940.")

*Astley Cooper Partridge, M.A. (Pretoria) Subject of Thesis: The Accidence of Ben Jonson's Plays, Masques and Entertainments.")

*John Robert Wahl, M.A. (Subject of Thesis: "The Pre-Raphaelite Movement and its Influence on English Literature.")

Degree of Master of Arts.

Classics.

First-class Honours:

William Hansell Hewitt, B.A.

Second-class Honours:

*Michael Hirzel de Lisle, B.A.

English.

First-class Honours:

*Burger Daniel Kleyn, B.A. (S.Af.).

Second-Class Honours:

Audrey Joy Gardener, B.A.
Jacobus Christian Quinton, B.A.
Owen Ren Williams, B.A.

Pass:

Marjorie Evelyn Goudie, B.A.
Thomas Johannes Prins, B.A.
Rita Beatrice Salamon, B.A.

English/Latin.

First-class Honours:

Anne Marion Hulley, B.A.

Pass: Emilie Hélène Meyer, B.A.

Geography.

Second-class Honours:

Elaine Hildegarde Lückhoff, B.A.

History.

Second-class Honours:

Petronella Dorothea le Roux, B.A.

Pass:

Nerina Primrose Cecelia Mathie, B.A.

Nederlands en Afrikaans.

First-class Honours:

Jan Anton Verhage, B.A. (S.Af.).

Pass:

John David Fuchs, B.A. (S.Af.).

Psychology.

First-class Honours:

Marie Elfriede Krige, B.A. (Rand).
Joseph John Sandler, B.A.

Second-class Honours:

Riva Leah Lazarus, B.A.

Pass:

Rose Levitas, B.A. (Rand).
Bex Reichlin, B.A. (Rand).
Sheila Steinberg, B.A.

Social Anthropology.

First-class Honours:

Ruth Levin, B.A.

Degree of Bachelor of Arts.

Helen Noreen Abrahams.
Joyce Marjorie Andrew (distinction in English and Latin).
Paul Lodewyk Avenant.
Rita Rachel Cohen (distinction in Hebrew).
Vere Elliott Condy.
Barbera Isabella Conradie.
*Dennis Michael Constant.
Margaret Cochrane Cowie.
Gezina Johanna de Kock.
Cecilia Carey de Lisle.
*Navarre de Villiers.
Sheila Dodd.
Odile Sophia Doughty.
Gertie Douglas.
Adriaan Gysbert Driessen.
Margaretha Maria du Preez.
Anna Amalia du Toit.
Terence Percy Eglington (distinction in Ethics).
Barrie Elizabeth Ferguson.
Marianne Gorm (distinction in German).
*Johannes de Villiers Graaff (distinction in Economics and Social Anthropology).
Sheila Marjorie Green.
Gerrit Diederick Griessel (distinction in Constitutional History).
Aldyth Dorothy Handley.
Jean Florence Harris (distinction in English).
*Gustav Gerhardus Hoexter.
Lily Joan Hosking.
Naomi Jacobson.
Emily Mary Jarvis.
Joan Noreen Jenkins.
Lilly Katz.
Catherine Helen Kleinschmidt.
Sheila Lanzkowsky (distinction in Hebrew and Political Philosophy).
Margaret Jean Longbottom.
Ena Loubser.
Siegfried Mahnke.
Ursula Marcus.
Veronica Mary Martin (distinction in English).
John George McCrae.
*John McGraw (distinction in Constitutional History and Roman Law and Jurisprudence).
Enid Alison Moll.
Alpheus Mfanamuni Ndlovu.
June Stuart Neville.