Assembling practice in clinical placements at a new medical school

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Abstract

Sociological studies of undergraduate medical education classically concentrated on students and tutors in the clinical environment and paid scant attention to course structures, systems of assessment or the institutional context in which medical education is embedded (Merton, Becker, Foucault, Atkinson, Bosk). Like them, this thesis offers a close ethnographic focus on the clinical experience, but combines it with a sociology of associations that explores the network of institutions and processes that impinge on it.

Employing an 'extended case method' it focuses on the creation of a new medical school, and building on previous studies applies new materialist perspectives to explore the development and processes of regulation, the organization of supervision and assessment, and the embodied nature of practice (Burawoy).

After an analysis of the original aims and development of the GMC's *Tomorrows' Doctors* it examines the school's early years, focusing on the assessment of professionalism. It shows how the need to transfer information between the school and the NHS shaped assessment, and explores the clinical legitimation of the types of assessment to inform a discussion of their exchange-value and use-value. It presents the results of observations in clinical placements through Foucault's perspective of the gaze and the 'implicit labour of language' in the assembly of practice, and by treating the senses used in patient consultations as mediators. It shows how patient-centered practice continues to reproduce a traditional individualized medicine and its hierarchy, and argues that patients in the community of practice serve as exemplars for comparison, learning, and the definition of the field of medicine itself.

Following Kuhn's assertion that scientific communities are best discovered by examining patterns of education and communication, this broader perspective makes an original contribution to the sociology of knowledge as well as to the fields of professional education and healthcare provision.

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Author’s declaration

I declare that this thesis is a presentation of original work and I am the sole author. This work has not been previously presented for an award at this, or any other, University. All sources are acknowledged as References

1. Introduction

'If the profession were in good health, medical schools were places of real education rather than (all too often) fact-stuffing feed lots, and residency programs were concerned with the character of the clinicians they train, there would be no need to write a word about it.' (Montgomery, 2013)

The significance of medical education

Medicine has been seen as a powerful influence in modern society, replacing religion as an explanation for suffering, and sometimes held up as the prototypical profession (Good, 1994; Freidson, 1970; Fox, 1957; Merton, 1957). Foucault saw the hospital alongside the school and the prison as pivotal in the production of modernity and of the individual within it, and the 'doctor-judge' with the teacher judge and the educator-judge as agents in the defining and policing what he called the 'universal reign of the normative' (Foucault, 1977 p.304). Today in what has been described as the century of biology, biomedicine has become one of the ways in which we define, understand and manage our lives, making it vital that we also understand how the life sciences impinge on that understanding (Meloni et al., 2016; Rose, 2013 pp.6,7; Latour, 2004). Although the public grasp of these developments may be shaped by a variety of media and materialities ranging from television documentaries and autobiologies to Fitbits, medicine and doctors still undoubtedly play a significant role in our direct experience of the benefits and threats of modern medicine, as Roter and Hall write 'encounters with doctors are highly charged' (Harris et al. 2015; Gillespie, 2012; Roter and Hall 2006; Strong, 2001; Nettleton, 1997). So it is important to understand undergraduate medical education which is the first phase of doctors' education, and particularly the clinical placements where students learn to practice.

Arguably education defines and constructs not only practitioners, but also fields of knowledge. Kuhn thought that he had made a mistake in identifying scientific communities by subject matter in *The Structure of Scientific Revolutions*, and later wrote 'I would now insist that scientific communities must be discovered by examining patterns of education and communication before asking which particular research problems engage each group', and others say that the curriculum that guides undergraduate medical education defines the underlying principles of medical discourse, as significant

as changes in biomedical technology (Kuhn, 1977 p.xiv; Atkinson and Delamont, 2009 pp.38,49). Merton asserted that 'the professional school is plainly the most critical phase in the making of the professional man' (sic) (Merton et al., 1956 p.31),

The General Medical Council's (GMC) recommendations on undergraduate medical education in the UK are set out in *Tomorrow's Doctors,* and the first edition makes clear that the undergraduate course is the foundation for future professional life. It states that doctors must be educated to adapt to change, to embrace new knowledge and the ideas and developments that will come from the expansion of medical science and technology (General Medical, 1993 pp.4,8). The implementation of *Tomorrow's Doctors'* recommendations in a new medical school at the beginning of this century provided a unique opportunity to explore the potential of the sociology of medical education to contribute to the sociologies of knowledge and the professions as well as of medicine.

Context and argument

In the UK, medical schools span the boundaries between the university and the National Health Service (NHS) where their students spend the majority of their time, and they are accorded 'remarkable amounts of autonomy' within the university (Stacey, 1992 p.210). This thesis will argue that the close focus on the student experience in the literature has largely precluded analysis of the institutional environments in and with which schools work, of the relationships between them, and of the changes that have taken place in them (Brosnan, 2007; Lempp, 2004; Sinclair, 1997; Atkinson, 1997; Bloom, 1995). It maintains that it is not possible to understand the field without some exploration of the consequences of a situation where although carrying the responsibility for undergraduate medical education, medical schools are not able to exercise the degree of control over the honorary tutors that teach on clinical placements that they enjoy over directly employed university staff (Lempp and Seale, 2004). The impotence of medical schools was captured in a phrase used by the Dean of the school being studied who spoke of the 'rubber levers' between the school and the clinicians who delivered much of its curriculum (school conference 2012). Moreover the pace and nature of change in the public sector means that the relationship between medical schools, hospitals and other providers of medical education is in constant flux (Turner, 1995) (see Chapter 2 *Pressures for change*). The thesis argues that 21st century medical education cannot be properly understood without considering the effects of providing education across institutional boundaries in a turbulent environment.

In an influential editorial in the American Journal of Public Health entitled *Reform without Change? Look beyond the Curriculum* Bloom criticised a mistake made by medical educators since 1932 which was the assumption that changes in the curriculum would change the way medicine was practised, because it ignored the social environment in which it is taught and the situations that confront doctors. He argued that the focus on curriculum reform had left the teaching and learning environment largely untouched 'with the result that there is reform without change' (Bloom, 1995) (and see: Stacey, 1992), Bloom contends that work should concentrate on 'change in the teaching and learning environment or what we mean by socialisation', i.e. a focus on behaviour, conceiving of the medical school as a social environment and seeing the socialisation process as more developmental than direct, 'a process of personal change and growth rather than simple acquisition' (Bloom, 1995 p.907). The UK sociological literature which consists of PhD research focused on students shares the perception that medical education has remained essentially unaltered, but this thesis proposes that a broader and more longitudinal perspective on the wider environment is necessary for an understanding of undergraduate medical education (Brosnan, 2007; Lempp, 2004; Sinclair, 1997).

Whilst drawing on some of the same theoretical approaches used in previous work, this study achieves a shift of focus through new materialist perspectives that decentre the student experience to focus on the community of practice, and through its examination of the role of the regulator and the place of the medical school and its students in the university, as well as schools' relationships with the NHS (Fox, 2016; Lave, 1991). The chains of relationships between them and between different aspects of the curriculum have been largely ignored by the observational or interview-based ethnographies in the literature, but a combination of the historiographic with the ethnographic through participant and non-participant observation provides an account that can locate the details of practice in their material, spatial, temporal and linguistic contexts to identify the causes and consequences of both continuities and change in the social environment of medical education.

The notion of assembly associated with Actor Network Theory (ANT) that invokes a 'sociology of associations' is used to understand how institutions and ideas and the relationships between them contribute to and inform the construction and operation of clinical placements (Latour, 2005). The assembly and enactment of a new curriculum in a new school provided an unusual opportunity to uncover some of what Bourdieu called 'the most profoundly buried structures of the various social worlds which constitute the

social universe', and in particular the 'mechanisms' which tend to ensure the reproduction of their reproduction or transformation' (Bourdieu et al., 1992 p.7). An examination of the regulatory background and the creation and consequences of a new curriculum it will be argued, contribute to the exploration of the individualism characteristic of the profession, the effects of institutional and specialist environments within it, and through practice, to paraphrase Montgomery or Groopman 'How doctors (learn to) think', to do and to practise (Groopman and Prichard, 2007; Montgomery, 2006; Atkinson, 1995; Freidson, 1970).

The thesis therefore takes what in previous studies was seen as context as a point of departure, using what Burawoy calls an 'extended case method' (Burawoy, 1998). He describes it as the 'Siamese twin' of positive science which tries to control for context, but this thesis takes the view that as he says, context is not 'noise disguising reality but reality itself' (Burawoy, 1998 pp. 7 and 13). He describes it thus:

> *'The extended case method applies reflexive science to ethnography in order to extract the general from the unique, to move from the 'micro' to the 'macro', and to connect the present to the past in anticipation of the future, all by building on pre-existing theory* (Burawoy, 1998 p.5).

Burawoy argues that unexplained, unacknowledged or tacit knowledge is not accessed through the interview but by analysis and participation. Theory is essential to guide the steps in reflexive science which are firstly to 'aggregate[s] situational knowledge into social process', and secondly 'move[s] beyond *social processes to delineate the social forces* that impress themselves on the ethnographic locale', thereby conceiving the everyday world as both shaped by and shaping an 'external field of forces', author's stress (Burawoy, 1998 p.15). It is he says a 'craft mode of knowledge production in which *the product governs the process'* and the goal is not to establish any definitive truth about the world, but the improvement of existing theory, author's stress (Burawoy, 1998 p.28).

The empirical work presented here addresses the two aspects of the curriculum that Bloom identifies, first what he called the direct attempts to inculcate traits such as critical and flexible thinking and professionalism, partly through the inclusion of courses in the humanities in chapters 6 and 7, and second the developmental changes that he argues can only result from a change in the teaching and learning environment in chapters 8 - 10. The effects of the regulator's attempts at reform are traced through the mechanisms of delivery and assessment in the former case, but the focus on behaviour that Bloom

suggests is the key to real developmental change shows even more clearly the limitations of recommendations focused on outcomes and competences when they are unsupported by changes to the relationships between the medical school and the honorary staff and institutions that provide the teaching and learning environment in medical education.

In sum the argument is that although a close focus on the clinical experience is necessary for an understanding of undergraduate medical education, it is not sufficient. The clinical experience takes place in a network of institutions and processes which can only be understood through a sociology of associations which explores the relationships between them, and so this thesis examines the creation and operation of the network in which undergraduates learn to practice medicine.

Uniqueness and replicability

Medical education on both sides of the Atlantic underwent a significant period of reform in the 1990s, and Bloom says that the 'inherent processes' and the content of undergraduate medical education were quite similar in Europe and the United States (Bloom, 1988 p.295). The ideas that informed the 'new pathway' at Harvard in the early 1990's, such as self-learning to cope with rapidly changing knowledge, the impact of new information technologies, the importance of the social context, resource constraints, and the combination of skill and care, are echoed in *Tomorrow's Doctors,* and are an indication that case-studies of their implementation might be applicable elsewhere (Forrester, 1996; Good and Good, 1993; General Medical, 1993; Flyvbjerg, 2006).

Nevertheless any study must also recognise that undergraduate medicine offers a unique educational experience, both in the sense that it is different from other subjects in higher education, and because each student's experience is likely to differ from that of their peers (Swanson and Roberts, 2016 p.103). Clinical placements are designed so that patients embody the students' learning experience, woven into, expressing and framing their knowledge of biomedicine, epidemiology, pharmacology and other forms of generic and 'tested' knowledge; as Atkinson says bedside teaching is peculiarly vivid and patients make memorable audio-visual teaching aids (Måseide, 2011; Atkinson, 1997 p.61). Learning to be a doctor is mediated by and through the patients that medical students see so every doctor's fund of experience will be different and students are encouraged to draw their own conclusions about them.

Although clinical placements are common to all undergraduate medical education, different courses offer different mixes of primary and acute care and the supportive pre- or non-clinical or university-based elements of different schools' curricula will differ too. By investigating placements in hospitals and practices which share the same curriculum, it is possible to 'control for' some of the variables which might affect a study that encompassed placements at different schools with different curricula, but there is evidence that NHS clinical placements share similarities whichever university is responsible for the course. Brosnan looked at courses at two quite different universities and concluded that:

> *'In clinical training, the similarity between the students' experiences at the two schools was striking. Despite the variations in the patient populations, the hospitals and the student bodies, the cultural system of medicine and the contingencies of the NHS pertained in both settings, producing almost identical sets of practices and dispositions among the faculty members and students, in which the performance of clinical competence was the ultimate goal.'* (Brosnan, 2007 p.194*)*

Background to the project

This research grew out of the author's employment as the Quality and Standards Manager in a new medical school between 2003 and 2012. When he joined it, the school had not yet received its first students, so it offered an unusual opportunity to observe the creation of a school before it was 'black boxed' (Latour and Venn, 2002 p.251). It soon became evident that the GMC's existing apparatus for the oversight of medical schools was not fit for purpose, so the position also afforded a privileged view of the creation of a regime of quality assurance for undergraduate medical education in the UK based on *Tomorrow's Doctors.* This regime was applied to the four new schools that had been created at the beginning of the century, and adapted for the wider constituency of undergraduate medical education.

The notion of undertaking a PhD did not crystallise until 2011, so although the thesis draws on the experience of working in the medical school, that experience could not strictly be described as participant observation since it was not accompanied by the ethnographic apparatuses of note-taking or recording, on methods (see Chapter 5 *Retrospective participant observation*). Nevertheless the job gave access to discussions, meetings and documents which have been invaluable in identifying the most important

issues, and the relative informality that attends the creation of any institution afforded opportunities for interaction with staff and students in laboratories, GP practices, and hospitals as facilitator and observer, see (Chapter 10 *Rehearsing communication*).

Most importantly, the experience of working in the school was crucial in identifying clinical placements as the central component of undergraduate education. The author's experience of diagnosing need and delivering staff development for clinical tutors and of facilitating masterclasses in hospitals and practices gave insight into the particularities of this unique environment for teaching and learning, as well as exposure to the field of research into medical education, and encouragement to pursue some of the sociological ideas that arose in discussion with colleagues. These discussions fuelled an interest in the contribution that sociology might make, and so to existing studies which in turn stimulated a desire to investigate how new materialist perspectives might be used to analyse and understand clinical placements (Fox, 2016; Brosnan, 2007; Lempp and Seale, 2004; Sinclair, 1997; Atkinson, 1997; Becker, 1977).

Participation in the creation and operations of quality and standards processes underlined the role of the regulator and suggested that an enquiry that linked the clinical placement experience with the GMC's recommendations could yield new insights into undergraduate medical education. It was this link between policy and practice, the macro and the micro, that guided the construction of the research questions for the thesis. These questions were honed by the process of seeking ethical approval which extended over a period of 9 months and involved not just the Department of Sociology, but the medical school, the Faculty, and the Health Research Authority Research Ethics Committees, as well as the local Trusts and GP practices that host clinical placements. The questions that appear below have been refined from those submitted for ethical approval through the Integrated Research Application System in April 2013.

Research questions

The principal research question is:

How was clinical practice assembled in placement teaching in a new medical school?

The secondary research questions are:

- How were *Tomorrow's Doctors'* standards and regulations developed, operationalised, applied, assessed, modified, and transferred?
- What were the implications for practice in clinical placements?
- How is practice in clinical placements best understood?

Clinical placements

Medical students spend more time in clinical placements than any other component of their five year undergraduate courses and they are most likely to provide their most significant learning experiences. As an indispensable and well-established part of medical education, clinical placements are defined by the General Medical Council 2009 as 'any arrangement in which a medical student is present in an environment that provides healthcare or related services to patients or the public', and as Atkinson points out bedside teaching, and the knowledge produced and reproduced there enjoys 'a privileged status in the clinical tradition', and is part of medical mythology (General Medical, 2002; Atkinson, 1997 p.3). The pre-clinical - clinical divide was one of the central concerns of the first edition of *Tomorrow's Doctors,* and it resulted in clinical placements being extended into the first two years of the undergraduate course and to other changes summarised in tables 1 and 2 (General Medical, 1993), (and see Chapter 6 *The context*).

Table 1 Clinical placements pre- and post-1993

Year	***Pre 1993***	***Post 1993***
1		One morning a week
2		One day a week
3	Full time	Full time
4		
5		

Table 2 Characteristics of clinical placements

	Pre 1993	*Post 1993*
Site	Hospitals	Hospitals and GP practices
Duration	One year	Eight week rotations
Supervision	Head of firm	Educational Supervisors
Choice of patients for teaching	Determined by ward round and specialist rotations	Determined by the integrated curriculum and body systems
Judgement/assessment	Particularistic, singular	Universalistic, multiple

Until the 1990s nobody seems to have been certain exactly what medical students did in clinical placements. Towle describes 'independent and poorly coordinated courses' and 'the heavy use of didactic instruction', and Jolly sketches a 'person culture' where one or two dominant personnel controlled academic units in an apprenticeship system focused more on 'the game like aspects of professional interaction' than on patients (Towle, 1998 p.4; Jolly, 1998b p.177), (and see: Bosk, 2003). Likening the content of clinical education in traditional settings to a recipe for minestrone soup where the exact recipe depended on the individual chef, Jolly writes 'The problem with clinical education as currently construed is that the apprenticeship system has left a legacy of an ideology but not the means to implement it', and the discussion of rotations in Chapter 7 shows the consequences, (ibid. p.180) (and see: Bosk, 2003). Jolly alludes to a 1977 report from the GMC that showed that the length of attachments for 'general surgery' in the first

clinical year varied between 7 and 20 weeks (Jolly, 1998a p.180). It would have been possible, although given the incidence of common conditions unlikely, that medical student A might have seen a range of different conditions from medical student B.

However, *Tomorrow's Doctors* specified a set of outcomes which medical students are expected to achieve, and that undergraduate medical courses leading to registration as a doctor in the UK must address. Even so, although individual courses try to ensure that all their students are exposed to the same educational experiences, it remains likely that one medical student's experience of clinical placement will still differ more or less substantially from another's. Even the new proposals for a national examination will not be able to counter the variation rooted in the different environments offered by different healthcare providers that has been construed as a strength of undergraduate medical education (Council, 2014a).

Clinical placements are delivered outside the university, by doctors in their own working environment where they ‘control the floor’ as Bosk puts it, and they are also diverse because hospitals and healthcare centres have different speciality mixes, expertise and practices to which students have to adapt (Bosk, 2003 p.95). Some senior clinicians may be inclined to practise what has been termed 'eminence-based' medicine, and students may be exposed to behaviour and practices which might not find favour, did they know about them, with either the medical school or NHS management, but which nonetheless remain embedded (Isaacs and Fitzgerald, 1999). Clinicians who have become accustomed to teaching without a curriculum may exercise the right to criticise or ignore aspects of the curriculum; (stereo-) typically they are likely to express the perennial criticism that medical students 'nowadays' don't know enough anatomy/science/physiology and are apt to say that the old system of apprenticeship was preferable to the present system: examples of clinical tutors’ scepticism about aspects of the curriculum are cited in Chapters 9 and 10. Such attitudes where they exist, are not as significant for students as they once might have been because rotations between placements and a national system for recruiting junior doctors have destroyed the web of patronage that grew out of the system of apprenticeship when students had to conform to the what Bosk called the ‘quasi-norms’, the eccentric protocols imposed by individuals in the 'firm' (i.e. clinical group) to which they were attached for a year and in which they might expect to be employed after graduation (Bosk, 2003 p.61). Also whereas formerly what went on in clinical placements was largely shrouded in mystery and relayed in anecdote, there is now evidence in some schools at least when clinicians

fail to turn up, or when they do, fail to adhere to the prescriptions of the curriculum, but medical schools' sanctions to discourage such behaviour remain limited.

So although thanks to *Tomorrow's Doctors,* more is now known about what is supposed to happen in clinical placements than for most of the 20th century, the gap between the curriculum and what actually happens remains. In principle it is comparatively simple to discover whether clinical placement teaching covers the outcomes set by the curriculum by asking the students. This is however only one, important perhaps but arguably rather programmatic way of assessing the experience; other less easily measurable aspects are significant in the learning experience. A tutor might ignore the curriculum and its objectives, but nonetheless provide a memorable experience due either to her own charisma or style of presentation, or a particular patient will stick in students' minds and may be recalled years later whenever they are confronted with a similar situation. More significantly, it will be argued that the disparity between what the curriculum specifies and what students observe and experience contributes to the uncertainties which permeate students' approaches and thinking, (Fox, 1957) and see chapter 8 on the perceived disparities between clinical tutors' assessments and examination results.

Clinical placements provide students with the opportunity to put theory into practice, to learn and to apply their clinical and scientific knowledge both through and to the patients that they see. They should bring together the 4 activities described in Kolb's experiential learning model: abstract conceptualisation, reflective observation, concrete experience and active experimentation; although medical students for reasons of safety, are not permitted full rein in the latter (Kolb, 1984). It is the fact that they bring thinking, seeing, feeling and doing together with patients which makes clinical placements such a powerful and memorable learning experience, and Kolb's classification gives other clues as to how clinical placement can mould students' own practice, not least through its recognition that knowledge is only one component in the mix. Specifying what students should know is necessary in achieving some consistency within and across medical schools, and the language of learning outcomes which describes what they should be able to do potentially makes the processes of teaching, learning and assessment more transparent.

Thesis structure

Following this Introduction the thesis has two sections, the second of which presents the data from documents and observations.

- Part I Chapters 2-5 Literature review, theory, models and methods
- Part II Chapters 6-11 Tomorrow's Doctors, the new school and learning in clinical placements

Part I Chapters 2-5 Literature review, theory, models and methods

Chapter 2. *The Sociology of Medical Education* explores the development of the field, reviews the main studies and begins to explore a suitable approach. It lays out the assumptions on which the research has been based and argues for a longitudinal materialist approach that reaches beyond the medical schools to include the regulatory environment and the relationships between institutional partners in the delivery of clinical placements, to be combined with a close focus on practice in general and speech in particular.

Chapter 3. *A theoretical context* introduces some theory which has been and some which will be applied to medical education, in particular notions of objective relations, language and authority, assemblage and mediation and the gaze from Bourdieu, Latour and Foucault respectively, and touches on some of the questions about purpose, agency and structure raised by these theories. It opens a discussion of concepts that may be used in the identification and analysis of the network of institutions, artefacts and actors that co-produce clinical placements. It indicates how these concepts may be used to construct an approach that makes an original contribution to the sociology of medical education, critiquing and building on existing work.

Chapter 4. *Learning in the clinical context* examines the professional context and the literature on attempts to teach evidence-based medicine in the clinical environment followed by a discussion of models of learning in medicine. It explores Schön's understanding of universities and professional knowledge, and the management of uncertainty through reframing, and others' notions about the 'new worlds' that medical students encounter as well as how discourse 'reconstructs' patients and students

Chapter 5. *Sources, methods and the metrological chain* presents the metrological chain both as a useful analytic tool and as an organising principle for the thesis. It begins with a discussion of standards and metrology and moves on to the methods and sources available to explore the development of regulation in medical education and the new school. Proceeding along the metrological chain from science and the law as overarching frameworks, it examines the concepts of inscription, Latour's 'cascade', and articulation

to explore how they may be applied. The discussion raises some of the difficulties with Bourdieu's notion of the habitus which leads to an exploration of approaches capable of encompassing the perceptual, conceptual, motor and linguistic skills that are combined in learning in clinical placements, proposing a de-centered notion of practice as a useful way forward. The chapter incorporates an examination of the methods, consequences and possibilities that attend the use of documents and observation, as well as the researcher's engagement with and in the field, reporting on ethics, consent, and the recruitment and characteristics of the various actors that were observed

Part II Chapters 6-11 Tomorrow's Doctors, the new school and learning in clinical placements

Chapter 6. *Tomorrow's Doctors* offers a history of the regulation of undergraduate medical education in the UK that analyses its three editions. It outlines the historical context and using sociological approaches to standardisation, presents an analysis of the 'vita activa' of the series as evidence about the GMC's developing regulatory role, the shifts in its approach, and their intended and unintended consequences.

Chapter 7. *The school's early history 2000-2008: professionalism, assessment and SSMs* begins with an account of the background to the bid for a new medical school and the GMC's interaction with it. It then explores some of the effects of medical education's move away from a system of apprenticeship, through a focus on supervision and professionalism, and their place and perceived legitimacy in the assessment framework. It focuses on portfolios and records of achievement, tracing the consequences of information transfer, showing among other things how students' response to the modes of assessment in SSMs shaped their choices and the programme itself.

Chapter 8. *The environment for clinical placement teaching* introduces the clinical environment through an exploration of the spaces where clinical placements happen and how they impinge on tutors, students and patients as well as the observer, and what they reveal about working practices. It also considers how time and timing affect the actors and practices on the wards and health centres, and how rotations and the intended and unintended durational peculiarities of medical education that emerged from *Tomorrow's Doctors'* recommendations impact on students. It then discusses the characteristics of patients, students and tutors.

Chapter 9. *Rehearsing the consultation* examines how tutors show in order to teach and students look in order to know, and at the processes of mediation and articulation that they use in their interactions with patients. It explores the skills that students use in their examinations of patients and how they externalise, clarify and refine the information they glean through touch, hearing, sight and speech, and the interaction between restraint and uncertainty in the judgements and summaries that they learn to make.

Chapter 10. *A verbal trade* unpacks Foucault's 'implicit labour of language' to present speech as the predominant medium for learning and practice in the clinical environment. It draws on the observations to consider the school's emphasis on communication with patients and explores the correlates and transformative properties of mediation and the iteration and reiteration of patients' histories and examinations, as well as how hierarchy is expressed and reproduced through the embodied forms of speech. It criticises predominantly linguistic accounts that suggest that patients are dehumanised through medical language and that doctors are used by the words that they employ, arguing instead that it is the *form* of speech that is critical for a sociological understanding of the gaze and embodied practice. The analysis shows how the spontaneity of which Foucault speaks is achieved.

Chapter 11. *Conclusion: implications and contribution* draws out some implications of the research for medical education. It examines the growth and consequences of clinical autonomy and the continuing significance of the clinical environment, then shows how practice built around the clinical encounter continues to reproduce a sovereign, autonomous doctor at a time when patient care is an increasingly collaborative activity. It indicates how notions of patient-centeredness and the dehumanisation of patients and indeed doctors might be approached though an examination of the commoditisation of learning. It examines the implications for undergraduate medical education, suggesting that a fundamental review should address the balance of power between the university and the profession and the shift towards collaborative care. It argues that an analysis of the forms of embodied speech furnishes a way of accessing the tacit, the spontaneous and the hidden. It discusses the application of new materialist perspectives to the linguistic and (post)-structuralist approaches that they have superseded, and argues that a sociology of associations that decentres students provides a fresh account of undergraduate medical education that takes account of curriculum change but goes beyond it to identify the consequences and limitations of reform.

Discussion

The thesis addresses 20 years of considerable change during which medical education has been rendered more accountable, a process which at the time of writing has culminated in the discontinuation of *Tomorrow's Doctors* and an exploration of the advantages of a national examination for undergraduates (Council, 2014a). It offers a sociological analysis that uncovers some of the roots of clinical practice as it is learned by tomorrow's doctors, through an examination of the operational and often unintended consequences of regulatory, educational and clinical practice in an attempt to see how undergraduate medical education has come to be as it is. If as the first edition of *Tomorrow's Doctors* says, 'the undergraduate course is the first step in the continuum of medical education, laying down the foundation for future professional life' it is important to understand how its most significant component, clinical placement, moulds tomorrow's doctors (General Medical, 1993 p 8).

The thesis argues that the effects of the 1993 recommendation for an integrated core curriculum were mitigated by other recommendations designed to boost clinicians' influence over curriculum planning and delivery. The organization of the provision into rotations defined by body systems changed the framing of practice, and the consequent fragmentation of supervision had implications for assessment in clinical placements. Addressing Bloom's aphorism of reform without change requires a sociology of associations capable of incorporating the timetables and documentation that spring not just from the reorganization of the curriculum, but also from the exigencies of its delivery across institutional boundaries.

Tomorrow's Doctors' developed a system of regulation for undergraduate medical education that increasingly relied on goals, outcomes and standards which have encouraged a reductionist approach to the assessment of skills that may be suited to the transmission of information across the boundaries between healthcare environments and the school and between the school and the GMC, but is ill-equipped to deal with professional attitudes and the provision of care. It is arguable that the volume and nature of assessment in undergraduate medical education encourages a stress on its exchange-value rather than its use-value and teaches future doctors how to game the systems they will encounter in the health service. In particular the assessment of professional attitudes and behavior is compromised by the forms it takes and its

perceived lack of clinical legitimacy, see the Appendix on the assessment diet as it was in 2008.

Medical schools occupy a unique niche in the university system; apart from their relationship with the NHS, clinical academics are rewarded in line with their medical colleagues rather than their academic ones, medical students are both physically and temporally separated from other undergraduates, and medical schools occupy dedicated buildings. Medical education has constructed its own intellectual space and developed a specialist apparatus of journals and conferences which like the sociological literature, and as Bloom observed, tends to concentrate on the details of teaching learning and assessment, but ignores some broader questions about the learning environment and the nature of the graduates it is producing. This thesis aims to provide a framework within which such broader questions can be conceptualised and addressed. What was striking about the first edition of *Tomorrow's Doctors* was its liberal education perspective which potentially opened up a discussion about equipping new doctors with flexibility and a commitment to continue learning. Hence to a degree this thesis is concerned with how that more broadly educational approach fared in the face of pressures to ensure that students were equipped with the skills to act as pre-registration house officers (PRHOs), now Foundation doctors, to continue the post-graduate stage of their education.

This thesis takes the context provided by *Tomorrow's Doctors* as its point of departure and identifies the social forces that 'impress themselves on the ethnographic locale' through an analysis of the implementation of the curriculum and assessment, combined with the observations of teaching in clinical placements (Burawoy, 1998 pp.7,15). It builds on critiques of existing work to offer a sociology of medical education capable of identifying the components that shape the community of practice to provide a nuanced appreciation of the extent to which reform has led to change, and how the doctors of tomorrow will practice medicine, and so define their field and their profession in the future.

Part I Chapters 2-5 Literature review, theory, models and methods

2. The sociology of medical education

This chapter offers a brief survey of the sociology of medical education, exploring its shift of focus from Merton's concern with the transmission of professional values, what Becker much later described as 'the majesty of their social mission' through Becker's own account of students' responses to the school environment, to a recognition, sometimes indebted to Goffman, of the importance of that environment (Becker, 2014; Atkinson, 1997; Good, 1994). The chapter argues for the advantages of a wider focus yielded by the examination of the regulatory context through to an examination of the assembly of clinical practice in placements that encompasses the school, the university and the NHS.

Sociology *of* or *for* medical education

Sociologists often seem to have been convinced that they can make a useful contribution to medical education, but for more than 50 years they have struggled to find acceptance from the field itself. In the first sociological study of medical education Merton thought he had identified a 'guarded and critical receptivity to sociology, an attitude of benevolent scepticism', and Bloom refers to the Western Reserve curriculum in the early 1950's that incorporated the behavioural sciences, but he also notes that only a few schools adopted them (Bloom, 1988 p.296; Merton, 1957 p.31). 30 years later Good and Good found cause to be less sanguine about medical educationalists' acceptance of social scientific insights. They draw attention to medical students' resentment at being taught social sciences as well as to the ambiguous position of anthropology in medical schools, where it was seen as a discipline critical not only of natural sciences but also of the organisation of medicine (Lindenbaum and Lock, 1993 p.103).

Merton thought that the place of the social sciences in the medical curriculum could be seen as an indicator of the medical profession's acceptance and use of sociological and anthropological insights and forms of explanation, a sociology *for* medicine as opposed to a sociology *of* medicine, and Brosnan thinks that his work and that of Becker was sociology for medicine (Brosnan, 2007; Merton, 1957). In the more restricted sense of sociology in the medical curriculum, progress in the UK is comparatively recent and hardly established, for although the latest edition of *Tomorrow's Doctors* does contain a social scientific learning outcome, that doctors should be able to 'Apply social science

principles, method and knowledge to medical practice', social science material is rarely integrated into or legitimated by clinical practice, and medical students often fail to see its clinical relevance (General Medical, 2009; Benbassat et al., 2003), The incorporation of sociology into the medical curriculum at the behest of the regulator is not the same as an acceptance of the relevance of sociological analysis to medicine or in the profession. The literature is studded with sociologists arguing that embedding a social science perspective in medical education would help doctors confront problems in healthcare by opening their eyes to the social consequences of class, gender and diversity among other things, although Weller and Woodward argue that the case has not been well made (Weller and Woodward, 2010; Sales and Schlaff, 2010; Dogra et al., 2005; Beagan, 2000) Brosnan's conclusion that the development of a better system of medical education requires a challenge to the construction of the epistemological values of all concerned in it, offers a more considered if somewhat pessimistic appraisal of the present state of a sociology for medicine and medical education (Brosnan, 2007 p.214).

From functionalism to the student experience

The Student Physician was the first sociological study of medical education, carried out in the shadow of the sociological grand theory developed by Talcott Parsons (Merton, 1957). Merton's work may be perceived as defensive functionalism, famously arguing as he did for 'theories of the middle range' to offset Parsonian grand theoretical ambitions, and his work on medical education demonstrates a reflective awareness of the context in which he was operating (Baert, 1998 p.54). Writing at a time when sociology was still establishing itself in the academy, Merton noted that previous studies of medical education had taken place in the field of psychology. Propounding the utility of a sociological approach, he pointed out that a psychological approach ignored students' relations with others in the school and tended to concentrate on such things as the qualities for admission and good performance (Merton, 1957 pp.65,67).

Generally functionalism saw medicine as a model profession even to the extent of absolving it from serving society's needs: Merton wrote that even if medical schools found themselves at odds with society's expectations they should resist demands that they regarded as incompatible with their professionally informed judgement (Merton, 1957 p.6). Atkinson thought that Fox, whose seminal paper on uncertainty in medical

education appeared in Merton's collection, idealised and revered medical science, (Atkinson, 1981; Fox, 1957). Fox and Merton were writing at a time when the social sciences looked to the natural sciences for explanatory models and sociologists were seeking to establish their professional status and this first sociological study of a medical school concentrated on 'top down' socialisation by an established profession and does not question professional values. Nevertheless Merton and Fox did develop 'path-breaking' concepts which can still be traced in the literature (Colombotos 1988 p.271). The core functionalist distinction between manifest and latent functions likely informed Merton's notion of direct and indirect learning, and may be seen as a precursor to more recent discussions of the 'hidden' curriculum. Fox's seminal paper on uncertainty in medicine and medical education appears in many subsequent sociological discussions of the field with 671 citations on Google Scholar 22/07/16.

Merton's concern about the rival claim of psychology as the most appropriate theoretical approach to medical education was well-founded and its influence continues to be significant to research in the field itself. Indeed the next landmark study in the sociology of medical education by Becker used a symbolic interactionist approach derived from the Chicago School social psychology of George Herbert Mead which incorporates the idea that people shape and control their conduct by role-taking the expectations of others (Becker, 1977). Becker employed the notion of perspectives to describe students' collective views of the world which arose from choice points, were distinguished from values by being situationally specific, and from attitudes because they contained actions alongside ideas. Unencumbered by the theoretical baggage of functionalism and less concerned to eschew social psychological ideas, Becker forged an approach which has remained influential in the sociology of medical education, one that provides a kind of bridge between psychological and organisational approaches. However although *Boys in White* focusses on student culture and explores how the institution of the school constrained students' attempts to solve problems, it does not consider the context for medical education. It does not explore how institutional practices are created, contenting itself with the observation towards the end of the book that they are 'deeply rooted in structures and culture and defended by vested interests'. The book's title signals its limitations when applied to a new school which in 2003 was concerned that it was failing to recruit enough 'boys' (ibid. p.442).

Atkinson characterises Merton's work as showing how people become doctors through an examination of how medical students acquire knowledge, attitudes and values, and Becker's as the investigation of the immediate day-to-day experience of school life, with the emphasis on learning the ropes and getting by (Atkinson, 1997 p.11). Hafferty describes these two studies as bolts of lightning across 'a field primarily lit by fireflies' (Hafferty, 2007). Whereas functionalism sees doctors as distinctive and special, the Chicago school denies that either doctors or medical students have any inherent properties that set them apart: Atkinson suggests that both studies ignore clinical teaching and the relationship with patients (Atkinson, 1997 p.11).

Perspectives, dispositions and knowledge

Boys in White pulled the focus away from the profession and its delivery of knowledge, values and attitudes to concentrate on the level and direction of the students' academic efforts, but subsequent ethnographic work on medical education has indeed concentrated on clinical teaching and the relationship with patients (Sinclair, 1997; Atkinson, 1997; Good and Good, 1993). Sinclair maintains that since medical education had been unchanged for 150 years, old studies continue to be pertinent and he even describes his own approach as 'broadly structural functional'; but at the same time claims to draw his theoretical framework from Becker as well as Bourdieu (Sinclair, 1997 p.4). The result is a rather eclectic, and to some confusing mix of perspectives, schemes and dispositions, the latter described as similar to psychological schemas that 'structure internal mental spaces, lead to action, encompass relationships and their inverse relationships and together make up the habitus' (Brosnan, 2007 p.41; Sinclair, 1997).

Sinclair and Atkinson also draw on Goffman, seeing medical practice as a theatrical setting in which roles may be located, a modified version of which was used to good effect by Strong in the analysis of medical consultations, (Sinclair, 1997 p.17; Atkinson, 1997; Strong, 2001). Combining it with functionalism, Sinclair equates frontstage with the manifest curriculum, and sees the use of the library and clerking on the wards as backstage work (Sinclair, 1997 p.15). Dramatic and religious metaphors have been freely recruited to describe both medical practice and clinical education: performance and litany to describe ward rounds and other consultations, as well as students' attempts to act as doctors, and Atkinson uses the term 'rituals' to convey the slow pace of change in

the routines of clinical education (Atkinson, 1997 p.4). Indeed, theatrical metaphors seem peculiarly apposite to a practice where theatres and performance are embedded everyday terms. The notion of frames used by Goffman and sometimes seen as an attempt to provide a theoretical 'back story' for his work also re-emerges in Schön's exploration of reflection in practice and the education of practitioners, (Schon, 1987) (and see: Latour, 2004).

Atkinson's own study of medical education draws on fieldwork carried out in the early 1970s in an apprenticeship system where students could choose their 'cliniques' or firms, and often the hospitals for their first (PRHO) post after graduation; choices no longer available to students in the 21st century (Atkinson, 1997 p.17). The clinic and bedside teaching had retained its largely unaltered and fundamental significance in the face of the fragmentation of medical knowledge and the growth of new specialisms, and students saw it as more real and relevant than the pre-clinical years; they were Atkinson writes, 'absorbed, seduced almost by the clinical gaze' (Atkinson, 1997 p.29).

He, like Fox and many others, is concerned with the centrality of indeterminate knowledge in clinical practice and, invoking dramatic and religious metaphors, says that it is not always susceptible to rational codification and explicit statement. He draws attention to the fact that even when the indeterminacy of knowledge is reduced or managed through encoding, all rule use implies some interpretive ability which is not made explicit in the formulation of the rule itself (Atkinson, 1997 p.183).

Stage management and the 'ethnopoetics' of medical work

Atkinson focussed on the 'stage management' that reproduced particular versions of medical work and culture, distinguishing between 'hot' medicine when causes have not been diagnosed and 'cold' when their symptoms have been brought under control. He says that the stage management tries to make what is in fact cold medicine hot by controlling the flow of information (Atkinson, 1997 p.146), (and see: Chapter 10 on 'thought experiments'). When he did his research clinical placements had no syllabus, only 'broad aims' so the flow of information was largely controlled by tutors, whereas today the curriculum plays a significant role in directing this flow (Atkinson, 1997 p.29). In the apprenticeship system he describes, the only guidance students got in planning

their undergraduate career and evaluating their progress was to be found in the student culture, again a contrast with the continuous surveillance and assessment of the modern curriculum (Atkinson, 1997 p.81). He stresses that personal reminiscence played an important part in clinical discourse and was a significant aspect of students' socialisation and that the injunction, still current today, that patients' beds had to be approached from the right hand side was never explained (Atkinson, 1997 p.91).

The significance of the anecdote is also foregrounded in the work Atkinson later carried out with haematologists in the UK and the US, where he concentrates on medical talk through what he terms the 'ethnopoetics' of medical work and the construction of cases (Atkinson, 1995 p.4). There he argues that the concentration on the interaction between doctor and patient has made much medical work invisible and notes that surprisingly little attention had been paid to Foucault's detailed analysis of scientific and medical knowledge, practice and education and so he concentrates on the 'distribution, transmission, legitimation, representation, and generally their *production* in everyday settings of work.' (Atkinson, 1995 p.46).

Away from patients, he found medical decision-making to be a collective, literate and research-oriented activity, characteristics that distinguish it from practice in undergraduate clinical placements, but the rhetoric and the rapidity of delivery, the flattened intonation, and the narrative framework of case presentations are common to both (Atkinson, 1995 pp.4,58,57,11). Atkinson proposes that juniors articulate the voice of the eye-witness, seniors the voice of experience and students undertake the journey from the former to the latter so that the achieved spoken performance brings chronological and evaluative frames of reference to bear on the case (Atkinson, 1995 p.131). Medical talk, and in particular the forms it takes and the vocabulary it uses both with and away from patients is a central concern of this thesis and is discussed further in chapter 4 and in the analysis of the observations of clinical placements presented in chapters 9, 10 and 11.

Pressures for change

Schön thought that the reorganisation of medical care would reshape the physician's role and consequently that the patterns of what counts as usable knowledge and task would

become unstable (Schon, 1983 p.15). The shift away from acute illness and from what Turner dubs ‘heroic medicine’ in principle presented a challenge to the scientific medical curriculum. But echoing the avoidance of a more social conception of public health noted by Harrison and Ahmad and others, Turner contended that there had been no noticeable concomitant curricular shift away from the dominance of natural science disciplines to allow more consideration of the political, sociological, economic and environmental causes of disease (Turner, 1992 p.133; Harrison and Ahmad, 2000). In 1998 Jolly observed that the GMC had not really caught up with the shift of health care away from the acute sector (Jolly, 1998b p.177).

Turner also looks at the challenges to the medical curriculum posed by postmodernism. (Turner, 1992). His analysis starts from the reorganisation of higher education, and so initially may be seen as a somewhat idealist position although as it continues, he situates it in the political economy of health. The analysis may still be open to the (in the terms of this discussion) rather mundane criticism that it takes too little notice of the fact that most medical education takes place away from the academy in clinical placements. Nevertheless the argument is worth rehearsing. Turner draws attention to the movement towards greater interdisciplinarity in higher education and says that, especially in the area of health the suggestion has been that health and social problems cannot be dealt with adequately on a monodisciplinary basis. This interdisciplinary movement is connected to higher education’s focus on ‘problem-solving’, now a common factor in many vocational areas, and indeed enshrined in the problem-based learning so prevalent in UK undergraduate medical education (Forrester, 1996). Interdisciplinarity Turner says, should ‘adopt an epistemologically creative and critical stance towards existing disciplinarity’, and is therefore likely to be sceptical about professional and other truth claims. It should lead to a reorganised curriculum, a resetting of the relationship between universities and the hospitals and practices that provide clinical placements as well as between doctors and patients (Turner, 1992 pp.126-7). Turner goes on to look at the challenges to medicine as a discipline and as a profession posed by social medicine and the sociology of health and what he calls the commercialisation of knowledge and professional practice. In an echo of Becker he concludes that ‘Postmodernism exposes the fact that mono disciplines are federations of thematic components which are held together by the pressure of professional authority and the vested interests of their practitioners’ (Turner, 1992 p.147).

Turner thought that a critical epistemology implied a reorganisation of the medical curriculum, but there is little evidence of such change and medicine's professional truth claims have not been called into question. Quite the contrary, curricular change seems to have been driven by the profession's perspective, indeed Jolly thought that medical education literature in the twentieth century tended to concentrate on the activities of the teacher, rather than the 'objective, length, structure or function of the period of clinical attachment', and that assumptions about what was happening in clinical environments had not been based on evidence (Jolly, 1998b pp 184,177).

At the operational level Merton understood that different disciplinary interests compete for time in the medical curriculum and that this makes any curriculum change difficult, and the GMC's analysis of the situation in 1993 clearly identifies these competing interests (Merton, 1957 p.24; General Medical, 1993) (and see below Chapter 6 *The context).* This is of course true of all curricula, but medical education has more competing interests than most, not only the clinical versus the non-clinical, but different disciplines with different epistemologies such as physiology, biochemistry, and anatomy as well as the different medical and surgical specialities (Bloom, 1988 p.298). Any discussion of curricular change in undergraduate medical education must take account of institutional as well as disciplinary boundaries; the clinical tutors who will teach on placements need to be convinced of any proposed changes, and their perspectives are informed not only by their specialist area but also the 'realities' of working in the health sector. As *Tomorrow's Doctors* made clear, since medical education is preparing students to enter that sector their voices neither can nor should be ignored (General Medical, 1993 p.21).

It is the task of a curriculum to organise effective learning, and modifications to medical education have tended to turn away from theory and academic approaches to concentrate on clinical practice. The adoption of problem-based learning (PBL) and the push to include more 'community' placements were both aspects of this direction of travel, but the challenge for this approach has been to ensure a degree of accountability such that practical learning can be shown to deliver the learning outcomes required by *Tomorrow's Doctors.* The mechanisms of implementation and the persisting and inevitable discontinuities between what the curriculum prescribes and what happens in clinical placements are fundamental to the present exploration of undergraduate medical education.

The curriculum, clinical placements and reform

The GMC which embodies both the professional authority and the vested interests of medical practitioners has used *Tomorrow's Doctors* as the template against which to measure medical schools' provision. So whereas in the schools studied by Merton, Becker, Atkinson and Sinclair, there is no evidence of a precisely defined curriculum for clinical instruction, now a series of specified outcomes provide the framework for UK medical schools' curricula (Atkinson, 1997 p.80). Have these developments meant that Sinclair was indeed conducting 'salvage anthropology in recording the dying moments of a traditional form of professional training', although at the time he thought it unlikely, and how much difference have these comparatively recent attempts to impose a curriculum made to the experience of clinical placement (Sinclair, 1997 p.3)?

Atkinson's Preface says that 'rituals and routines' of clinical education have changed rather slowly, and he was in no doubt that all the scientific and technological developments and the changes in the theory and practice of medical education had done nothing to undermine the central importance of the clinic and bedside teaching (Atkinson, 1997 pp.vii,6). Sinclair and Stacey agree that that the medical profession has contracted with the state to produce competent, safe practitioners but that the profession had retained the right to train the next generation in the way they saw fit and as already noted Merton thought that this was as it should be (Sinclair, 1997 p.322; Stacey, 1992 p.13; Merton, 1957 p.6). For Merton the price of autonomy was the need to be responsive to changing health problems, themselves often brought about by medicine's own accomplishments (Merton, 1957 p.6).

Discussion

Since Merton's seminal work, the discipline of sociology itself has shifted from a concern with its explanatory power compared to the natural sciences, via Kuhn, to studies of science and scientists that have interrogated the processes of science which in turn has led to a revival of interest in more humanist and new materialist forms of understanding (Fox, 2016; Baert and Silva, 2010; Savage, 2009; Merton, 1957). The sociological focus on medical education has moved in line with the discipline's evolving theoretical preoccupations, from a functionalist concern with socialisation, through symbolic

interactionist notions of student perspectives later articulated through and modified by dramaturgical metaphors and via the concept of dispositions, to consider clinical teaching and the relationship with patients, but examination of the context for clinical practice in placements is rare in the literature.

This study exploits the fact that since 1993 the outcomes of *Tomorrow's Doctors* have provided an anchor for a curriculum designed to structure students' learning experiences, tempered by an understanding that its content cannot completely specify much less determine those experiences. It will explore how *Tomorrow's Doctors'* recommendations were articulated through a new curriculum, and the implications for practice in clinical placements. The curriculum has to span the institutional boundaries between the GMC, the university and various NHS clinical settings, so the differences between institutional structures and processes further inflect its articulation and reception, its significance and its delivery.

The study operates with some basic sociological assumptions, the first of which may be encapsulated in Bourdieu's axiom that 'Every established order tends to produce (to very different degrees and with very different means) the naturalisation of its own arbitrariness.' (Bourdieu, 1977 p.164). This prompts an examination of how an order becomes established in the light of the fact that, as Hafferty and Castellani put it 'the great bulk of social life… is rendered opaque by its ubiquity' (Hafferty F, 2009). Bourdieu also observes that (social) scientific study must break with common sense assumptions about the social world, and interrogate the everyday or official interpretations which are used by, and indeed embedded in social institutions and the people associated with them because, 'the pre-constructed is everywhere' (Bourdieu et al., 1992 p.235). This interrogation of common sense or the taken-for-granted reality of the social world may be said to characterise the sociological enterprise, in the present case from functionalism through to Latour's observations about the superiority of relativist connections between frames of reference as sources of objective judgement, over the arbitrary 'settings' of common sense (Latour, 2005 p.30).

The assumptions of the arbitrariness and opacity of social life and order imply an approach that whilst maintaining a separation between actors' experience and an observer's conceptual schemes, takes care to distinguish between the unobserved and

the unobservable. So it avoids a privileged, esoteric and densely encoded perspective that posits unobservable theoretical constructs as explanations for behaviour, Savage's 'deep structural processes' or 'master' variables. Instead it is predicated on an understanding that the systems and processes of medical education have been built, or in Latourian terms assembled, that the traces of why and how they were built can be found, and that an examination of their construction and operation can yield insights that make them more transparent, knowable and mutable (Savage, 2009 p.157).

The approach will use the medical school's attempts to operationalise *Tomorrow's Doctors'* recommendations to reveal the structures by tracing the effects of an integrated curriculum and its sometimes unintended consequences (Timmermans, 2010). Basic to this approach is the recognition that staff and students whilst ostensibly operating with and within the order, have their own ideas about the system, that they may even use methods developed by the social sciences to explore it, and that those ideas are themselves a significant part of it (Latour, 2005 p.29). So although it may not necessarily find favour with them, the approach takes actors' accounts alongside observations as sources of evidence for an analysis which seeks to uncover what Bourdieu refers to as the 'buried' structures and the ''mechanisms' which tend to ensure the reproduction of their reproduction or transformation' (Bourdieu, 1992 p.7)

Bloom's description of medical education as 'reform without change' finds echoes in Atkinson's description of it as changing rather slowly and Sinclair's that it had remained fundamentally unchanged 'for the last 150 years or so', (Sinclair, 1997 p.1; Atkinson, 1997 p.vii; Bloom, 1995).This study's focus on new systems of regulation and a new school, seeks to show how institutional forms, whether traditional or new are sustained and how they affect development: the most salient example being the system of apprenticeship that continues to cast a shadow over the delivery of a new curriculum (Stacey, 1992 p.113). The thesis also builds on the work that has focussed on students and what are variously conceptualised as perspectives, schemas and dispositions, by recognising that medical education is co-produced with students, not simply reproduced (Becker, 1977; Sinclair, 1997; Bourdieu, 1977; Hafferty, 1998).

More than thirty years apart, Merton and Good and Good's studies of medical education looked at new curricula at Cornell, Pennsylvania and Western Reserve, and Harvard

respectively, whilst others in the UK have examined established schools in London, Edinburgh and Cambridge (Brosnan, 2007; Lempp, 2004; Sinclair, 1997; Atkinson, 1997; Good and Good, 1993). Whilst Merton and Good's work is longitudinal it pays little attention to the historical and institutional context, and with the exception of Brosnan and Lempp, the UK studies predate *Tomorrow's Doctors.* This study of a medical school that welcomed its first students in September 2003 discusses the first 1993 edition of *Tomorrow's Doctors* in Chapter 6, and draws on evidence gathered from the school's planning and inception from 2000 and during its operation over the succeeding 10 years in Chapter 7. A concern with the wider context requires different methods to provide a historical dimension combined with detailed examination of teaching and learning in clinical placement to add depth and comprehensibility to the account.

It entails an exploration of practice and the devices which impinge on it, and will include a consideration of the metrology which underpins the curriculum, see below Chapter 5 *Sources and Methods*. This allows a shift from contemplating the consequences of stasis to an analysis of its maintenance that will shed some light on the findings of previous research, and facilitate a re-examination of the concepts used to describe and evaluate medical education (Latour, 2005). The next 3 chapters continue the theoretical and conceptual discussion and try to follow Savage's exhortation to 'historically ground methodological repertoires', to accept that each can help capture 'the social' and lay some groundwork for the exploration of medical knowledge, the professional context, the educational environment, the tools and the forms which are such a significant part of medical practice, exploration and learning (Savage, 2010 p.248).

3. Theoretical context

'The difficulty in sociology, is to manage to think in a completely astonished and disconcerted way about things you thought you had always understood. That is why you sometimes have to begin with the most difficult things in order to understand the easier things properly' (Bourdieu, 1992 p.207).

The next 3 chapters introduce more sociological theories and methods applicable to medical education. This chapter considers contributions from Bourdieu and Foucault, aspects of whose work have been applied to medical education, as well as concepts drawn from ANT such as translation, cascade, mediation and articulation that will be used to shed more light on it (Latour, 2005). It begins with Bourdieu's ideas about what theory should be trying to do before visiting the opposition between agency and structure and the connections between language and symbolic power (Bourdieu, 1990; Bourdieu et al., 1992).Concerns about how the social sciences should proceed are also raised in the exploration of assemblage, the translation of information and the process of mediation as presented by Latour (Latour, 2005). The chapter then turns to *The Birth of the Clinic,* Foucault's account of the clinical gaze, and in particular the role of the practices of saying and seeing, speech and description, and the confluence of the clinic as science and the clinic as teaching (Foucault, 1994). It ends by revisiting the history of the sociology of medical education to compose a focus on practice that avoids some of the pitfalls of structure and agency, takes account of processes and artefacts, and is capable of offering a new approach to perennial concerns such as the uncertainties that attend medicine in general and medical education in particular.

Objective relations, practice, language and authority: Bourdieu

Since about the turn of the century a Bourdieusian framework has been more wholeheartedly taken up by sociologists researching medical education, (Brosnan, 2010; Lempp and Seale; 2004; Albert, 2004). Bourdieu's approach seems particularly apposite to the examination of medical education because he is interested in how practical mastery is learned (or produced) and how it works (or functions). Researchers have used

his notion of the habitus, described as a ‘structuring structure’ consisting of ‘principles which generate and organise practices and representations’ and internalised through interaction with the physical and social environments, in their examinations of medical education (Brosnan, 2007; Bourdieu, 1990). Bourdieu’s purpose is to make practical mastery ‘objectively intelligible’ through what he rather poetically calls an ‘objectively enchanted experience’ of practice (Bourdieu, 1990 p.4). He warns that this cannot be achieved through phenomenological reconstruction, it requires a theory of practice and practical knowledge. Furthermore, this theory itself has to be supported with a theory which accounts for the theoretical and social conditions which provide the possibility of what he terms ‘objective apprehension’, hence a theory which accounts for the limits of this mode of knowledge.

Bourdieu’s assumption of the ubiquity of the pre-constructed indicates that the task of sociology is to unpack common sense to uncover the principles of its construction, and for him as indeed for Latour (see below), that construction is itself a result of practical activity: what social science should do is reveal how everyday assumptions grow out of everyday activities (Latour, 2005; Bourdieu, 1992). He wants to ‘wrench scientific reason from the embrace of practical reason’ so that what seem to be ways of understanding and interpreting are themselves conceived of as objects of sociological analysis; as he puts it, to turn the everyday instruments of knowledge into objects of knowledge (Bourdieu, 1992 p.247). This shows not just how actors see the world, but how their perceptions (the ways in which they see it) are built and determined by presuppositions, and in turn how these presuppositions are themselves constructed.

To analyse the everyday in this way of course entails a distancing from it and to achieve this Bourdieu focuses on what he calls objective relations which are separate from agents’ interactions with one another, i.e. relations that exist ‘independently of individual consciousness and will’ (Bourdieu, 1992 p.97) Analytically this means examining networks of relations between positions where positions are defined as structures which impose certain ‘determinations’ on their occupants or institutions. Bourdieu uses the term ‘determinations’ rather than obligations perhaps because he wants to stress that both the instruments of knowledge and positions are ‘instruments of domination’ (Bourdieu, 1977 p.13).

It is not enough to identify the positions, an ‘adequate science of society’ must also trace how agents come to internalise the unconscious principles that order the world and determine or inform their practices (Bourdieu, 1992 p.97). Bourdieu says that perceptions of the social world are congruent with and reinforce the established order by seeming to present themselves as necessary and unquestionable (Bourdieu, 1992 p.235). He is at pains to identify that the principles of the construction and internalisation of these objects of knowledge are themselves the result of practical activity and takes a pragmatic view of how we might go about the process of discovery, we should he says use whatever techniques are relevant and available in the circumstances (Bourdieu, 1992 pp.77,277). Baert, drawing on the evidence of Bourdieu’s work in Algeria argues that Bourdieu believes theory should grow out of research, and that he conceives of theory as a set of tools or directives which help to indicate the questions which should be asked (Baert, 1998 p.29).

Bourdieu is generally credited with overcoming the opposition between structure and agency; as Baert puts it his *idee maitresse* is to ‘transcend the antinomy’ between subjectivism and objectivism, the former alluding to how people experience or conceptualise and then act (in) the world, the latter referring to the structures which underlie people’s knowledge, concepts or purposes (Baert, 1998 p.30). In the context of the sociology of medical education Brosnan recasts this as repairing what she calls the schism between socialisation and organisation (Brosnan, 2007 p.13).

For Bourdieu, language both expresses and reproduces social structure, and what he terms bodily ‘hexis’, ‘durable ways of standing, speaking, walking and thereby of feeling and thinking’ are similarly determined (Bourdieu et al., 1992 pp. 2,13). These linguistic and behavioural practices are derived from and measured against practices that are legitimated by dominant actors, and competence in them is gained through ‘the conspicuous consumption of training (i.e. time)’ which is, as he says ‘nowadays’ certified by the educational system, and bodily and linguistic expressions themselves are often subject to temporal rules (Bourdieu et al., 1992 pp.53,55,89), (and see Chapter 8 *Time and timing,* and Chapter 10 *Understanding learning in the clinical environment* and *Tutor’s Speech*). He sees rituals as a limiting case where (sometimes imperfect) technical competence is turned into social competence through a simulacrum of authority. Formal language carries risks if what he calls the ‘performative logic of symbolic

domination' prevails to the detriment of the communication that language should impart (Bourdieu et al., 1992 pp.41,85) (and see Chapter 10 *Feedback and repetition*).

But Bourdieu has been criticised on the grounds that he tends to ignore peoples' ability to distance themselves from their lives and to analyse them, (Baert, 1998 p.33; Brosnan, 2007). Dreyfus and Rabinow point out that that if agents are deceived by an *illusio* which can only be identified by an outsider, it is unfalsifiable (Dreyfus and Rabinow, 1993 pp.41-2). To counter this tendency, the present study will not be researching 'down' and it will use actors' own (often written) distancing mechanisms to uncover the 'pre-constructed', by drawing for example on minutes of meetings, accounts of and papers for and from GMC visiting teams, proposals on curriculum content, and forms for clerking, delivery and assessment (Latour, 2005). It will capitalise on the fact that these recording and reflective tools, devices and practices provide useful sources, but its focus will often be on how these devices themselves constrain practice and facilitate or limit the possibilities for understanding the phenomena for which they are ostensibly designed: for example how reflection as an educational tool and student records of achievement are distorted by their operationalization in the clinical environment (see Chapter 7 *Tracking professional attitudes and behaviour through portfolios*).

Assemblage and traces: Latour

ANT claims to address the concern that the social sciences were illegitimately arrogating to themselves a privileged perspective by assuming that actors merely had language whereas the social sciences deployed a meta-language in which actors' language was somehow embedded (Latour, 2005 p.49). As Latour says ANT's 'main tenet is that actors themselves make everything, including their own frames, their own theories, their own contexts, their own metaphysics, even their own ontologies', and the task of social research is to trace exactly how these things are made and maintained (Latour, 2005 p.137). Social science must look for traces because what he refers to as 'social aggregates' cannot, as he puts it, be pointed at like cats or chairs and ostensibly defined, instead they are made by the various elements by which they are said to exist (Latour, 2005 p.34).

Latour focusses on the processes of ‘translation’ where information circulates from one place or site to another and distinguishes between *mediators* that ‘transform, translate, distort and modify the meaning or the elements they are supposed to carry’ and *intermediaries* that only transmit but do not modify. For him mediators are social and intermediaries asocial so ‘there is no society, no social realm, and no social ties, *but there exist translations between mediators that may generate traceable associations*’ his stress (Latour, 2005 pp.38,80,108). He avers that what he terms concreteness in an ANT study may be identified by the increase in the relative share of mediators over intermediaries (Latour, 2005 p.61).

When examining what circulates from place to place, it is useful to focus on the modes of transportation or translation which Latour calls ‘forms’ (Latour, 2005 pp.222ff). In many cases this term coincides with the conventional definition i.e. pieces of paper or interfaces designed to channel and define responses and other actions, but in the ANT vocabulary form may refer to a variety of interactions and artefacts, some of which may be more traceable than others: from conversations in the corridor to formal minuted meetings, and in this case to the templates for history taking and for physical examinations and tests. The point is that the forms themselves can be mediators because they embody assumptions about the information they are designed to transmit (or translate) and they may be more or less successful at conveying those assumptions and in constraining the actions which they encapsulate or address. Their success or lack of it will depend not just on their design, but also the circumstances in which they are built, transmitted and received (Berg, 1997). Forms in the everyday material sense provide just one example of the ‘non-humanist ontology’, of the objects which ANT exhorts social science to consider more attentively in its ‘reassembly’ of the social (Savage, 2009 p.164; Latour, 2005).

The nature of the relationship between objects in general and human actors is that objects tend to shift (or are perceived as having already shifted) from being mediators to being intermediaries – similar to what is more commonly referred to as reification or objectification: as they become more encoded they also become more impenetrable; put differently they tell us less as their uses become fixed, permanent or ‘black boxed’. The ANT researcher’s task is made easier by seeking situations where the traces of the making and maintenance of social aggregates or groups is particularly evident, and so

innovations, controversy and change are regarded as especially useful circumstances because they either precede or break open the black box, or reveal the making of the 'pre-constructed'. Latour notes that the making of an enterprise offers a view of it which is different from the official view that is likely to take over once it is established (Timmermans and Oh, 2010; Latour, 2005 p.88), (and see Chapter 6 *Tomorrow's Doctors* and Chapter 7 *The school's early history*).

If forms are seen as intermediaries, actors find themselves dealing with the ways in which they structure information as a fait accompli, so they have to deal with the consequences of that structuration and act accordingly. But although their ostensible purpose may be to routinize (or 'simplify') information, forms may also assume or demand motor or intellectual skills and Latour writes that they have to be made to 'talk', that is to yield descriptions of themselves - 'scripts' of what they are making other human or non-human actors do (Latour, 2005 p.79). However an account that acknowledges actors' reflectiveness, and at the same time considers forms as actors, implies an interrogation of what seem to be intermediaries so that they can be turned into mediators to make them talk: the ratio of mediators to intermediaries is one way of assessing the success, 'thickness', or concreteness of the description offered, (Savage, 2009; Latour, 2005 p.61). It is difficult to see where this process might end: whereas one of the problems with functionalism was its inability to account for change, ANT suggests that the social is continually reassembled.

It may depend on what we conceive of as innovation, for example forms (like science perhaps) tend to be revisited and refined as they reveal their peculiar distortions, or in Kuhnian terms anomalies, and we can assume that this process of refinement or reformatting should be illuminating to the social scientist (Kuhn, 1976). At any given time, between innovations, a form's effect, what it makes actors do, may be thought of as both temporally and situationally determined – for example whilst students are constrained by a form such as an exam, examiners have more discretion to interpret, recognising, as Boltanski suggests that we should distinguish between those who make the rules and those subjected to them (Boltanski, 2007 p.146). Such an analysis opens up Bourdieu's notion of positions by examining the construction and operation of the (usually) multiple 'determinations' which impose themselves on their occupants or institutions. It does not mean assuming, as Bourdieu seems to, that power is somehow inherent in certain

positions, although that might be the common sense understanding, but accepting that it is 'the final result of a process and not a reservoir, a stock or a capital that will automatically provide an explanation: power and domination have to be produced, made up, composed' (Latour, 2005 p.64).

Hence at any given time human actors and institutions are likely to take forms as 'read' (in ANT terms as intermediaries), even though they may recognise the distortions they represent, so individuals' readings of those distortions, and their ability to modify them is likely to depend on their position (see Chapter 6 *Discussion*). Even when distortions are recognised, they may be tolerated because designers of forms might be reluctant to modify them, weighing up the advantages of change against the convenience of having processes that are already understood, and because innovation has costs associated with redesign and may have implications for reskilling. It is reasonable then to ask about the conditions under which forms are modified by those who employ them: when does reflection trigger action? This in turn demands consideration of the range of circumstances and actors that may contribute to process. Forms' fitness for purpose may often be defined by rule makers or designers, but they in turn may be but more often are not influenced by those responsible for their implementation or those subjected to the procedures they dictate, or by emerging technological opportunities for more effective delivery.

For the most part human actors find themselves in the position of users rather than designers; they just have to deal with the way forms order their world. Students know that they have to take exams, and although they may question whether their particular examination is fair (generally construed as its relationship with what they have been taught) they have agreed to submit to the system of examinations if they are to qualify as doctors. But students find ways to ignore or manipulate forms, distorting the information they are supposed to carry and sometimes they may have the tacit or explicit cooperation of their tutors (Brosnan, 2007 p.200), (and see Chapter 7 *Tracking professional attitudes and behaviour through portfolios*). So, just like their designers, actors subject to forms may have little interest in challenging them, especially if they have been successful at manipulating them. As Latour argues, the deployment, completion and scrutiny of forms and any metrology associated with them is fundamental to the organisation of much of social life, and although from the ANT point of view the

order they represent is not intrinsically stable, the interests of actors who make them and are subject to them may militate against their modification, thus producing or performing stability and so inhibiting change, (see Chapter 5 *Metrology and standards*).

The clinic, seeing and saying: Foucault

Foucault suggests that the discussion of medical education after the French revolution combined with the abolition of the old hospital and university structures that swept away the 'dogmatic language' or the naming of disease which had hitherto been an essential stage in the transmission of truth central both to the examination of students and to prognosis, contributed to the establishment of a fundamentally new kind of clinic (Foucault, 1994 p.48). He says that experience at the patient's bedside has always been central to medical learning and understanding, but that the 'fundamental perceptual codes', the grid through which that experience has been articulated into analytic categories and expressed, changed constantly (ibid. p.54). The access of the medical 'gaze' to the sick body that he argues has characterised medicine since the end of the C18th, and the new verbalisation of what we now see as 'positive science', was not achieved through more or less gradual processes of accumulated deepening knowledge, but was instead the result of a 'recasting at the level of epistemic knowledge itself' (ibid. p.137).

Dogmatic language had been embedded in two taxonomies, a classification (or 'species') of disease promulgated through university training, and a competing form of a medicine of climates and places derived from the state's concern with epidemics (ibid. p.34). The result was that there was no one model to allow the definition and development of medical perception and concepts. So the reform of the teaching system at this time had profound significance because it cleared the epistemic ground for the recognition that the whole of medical knowledge could be reorganised and more decisive forms of experience established. Once this dogmatic language was no longer seen as a necessary stage in establishing truth, teaching could be squarely located in concrete experience such that 'A way of teaching and *saying* became a way of learning and *seeing*' (his stress), (ibid. pp.68,64).

For clinical experience itself to become a form of knowledge, language had to include a new domain, ‘a perpetual and objectively based correlation of the visible and the expressible’ leading to a new use of scientific discourse that was rooted in saying what was to be seen and that defined the experience as ‘showing by saying what one sees’ (ibid. p.196). The demolition of the old structures that had supported two opposed languages then allowed

> *‘a language without words, possessing an entirely new syntax to be formed: a language that did not owe its truth to speech but to the gaze alone. In this hasty recourse to the clinic, another clinic, with an entirely new configuration, was born.’* (Foucault, 1994 p.68)

This new kind of clinic that allows things to surface to the doctor’s observing gaze is Foucault says, ‘proudly proclaimed by doctors’, ‘constantly praised for its empiricism’ and characterised by a ‘restraint of clinical discourse’ that rejects theory, systems and philosophies, and it was this freedom from presupposition that allowed it to reorganise in depth both medical discourse and the possibility of disease (ibid. p.xix). The clinic orders the manifestation of diseases which become what Foucault calls the ‘text’: patients become the vessels in which it appears (Foucault, 1994 p.59). Thus conceived the clinic provided variety and repetition, it filtered out irrelevancies and distilled essential knowledge: Foucault suggests that in the clinic

> *‘By showing itself in a repetitive form, the truth indicates the way by which it may be acquired… There is, therefore, no difference in nature between the clinic as science and the clinic as teaching.’* (Foucault, 1994 p.110)

But neither is the clinical gaze intellectual in the sense of seeking essence beneath what is visible, what it does is to go from body to body using the senses and comparing, because at the bedside, theory is replaced by observation and experience (ibid. p.54). The clinic was fundamental to the new organisation of medicine, forging its scientific coherence, its social utility and its political purity, it became a ‘temple of nature’, a form of truth that was manifested in everyday practice (ibid. p.70).

Description, saying what one sees, makes the link between the patient and the disease, from the individual to the conceptual, and by saying what is seen it is thereby made into knowledge, so to describe is to learn to see, but

> *'Description, in clinical medicine, does not mean placing the hidden or the invisible within the reach of those who have no direct access to them; what it means is to give speech to that which everyone sees without seeing – a speech that can be understood only by those initiated into true speech.*' (Foucault, 1994 p.115).

So the gaze is very much a doctor's gaze, and clinical description a precise rendition of what is observed. Both are the preserve of an institutionally embedded, educated professional with the power to make decisions and intervene. It was because the doctor's gaze had been liberated from the constraints previously imposed by the need to classify such things as forms and frequencies that it was able and indeed should always remain particularly alert to nuances of colour, anomalies and variations. Critically it would go beyond the self-evident to assess risk, Foucault describes it as a 'calculating' gaze (ibid. p.89). To grasp this level of analysis which defines the form of truth he employs the idea of an 'aesthetic', and the rules for reaching it are he says, the product of a '*fine* sensibility' (author's stress) which acknowledging Roucher-Deratte, requires great sagacity, attention, precision, skill and patience (ibid. p.121). At the end of the 18th century, the post-revolutionary understanding of liberty as 'the 'unfettered force of truth' meant that the requirements of political ideology and medical technology converged to free the gaze and allow it to dominate (ibid. pp. 38-39). Unobstructed by theory the observing gaze leaves things as they are, it doesn't intervene through speech or gesture, it is silent and pure (ibid.4 p.107).

Although this conception of the gaze includes senses other than sight such as hearing, smell and touch, Foucault wants to make vision the dominant sense because it draws attention to what he calls the 'triumph' of the gaze that was achieved through autopsy, the 'white brightness of death' that revealed so much about disease and its traces in the body (ibid. p.164,165). What is to be observed in the clinic are the surface markers that lead the doctor to the underlying organs, and Foucault says the medicine of symptoms on the surface eventually disappeared in the face of a clinic that was ordered by

pathological anatomy with its in-depth emphasis on organs, sites and causes (ibid. p.122). He writes, ‘anatomo-clinical method constitutes the historical condition of a medicine that is given and accepted as positive’, and that the gaze depended on the ‘legible basis of death’ (ibid. p.196).

Once death became embodied in the living bodies of the individuals and integrated into medical thought, a science of the individual became possible (ibid. pp.196-7). So the gaze was not reductive but established, or as Osborne writes ‘produced’ the individual in ‘his (sic) irreducible quality’ thus facilitating a scientifically structured discourse about an individual rather than, as had previously been the case, one about classifications and entities, (Osborne, 1994 p.36; Foucault, 1994 p.xiv). This was reinforced by the insights from anatomy which Foucault says integrated the possibility (one might suggest the likelihood) of what he calls individual modulation, e.g. anatomical variation: previously although individual variation had not been discounted it had been attributed to personality or environmental influences. So the ‘scholastic forms of thought’ were now also opposed by the idea of an individual patient, as Osborne puts it ‘The clinician is a medical scientist who works with the real thing – patients.’ thereafter medicine was oriented around the history and symptoms of the individual patient, (Osborne, 1994 p.196).

Foucault’s discussion embraces what at first sight seem to be allusive abstract ideas, classifications, essences, discourses and metaphors to show how the clinic was pivotal to the establishment of the individual patient at the centre of medical practice and understanding, but his analysis also indicates how this ‘temple of nature’ provided a form of truth that was manifested in concrete everyday practice (Foucault, 1994 p.70). Foucault accounts for and describes clinicians’ scepticism about theories, and their celebration of empiricism and experience rooted in observation; as Rose observes *The Birth of the Clinic* demonstrates that the history of truth with all its disruptions, is a matter of practices (Rose, 1990 p.59). Rose draws attention to how the new juxtapositions between and among patients and doctors in the clinic threw up new ‘lines of visibility’ providing a seedbed for statistical approaches and new taxonomies and here as elsewhere, urges us to examine the ‘mundane material practices of looking, seeing, experimenting, calculating measuring and writing’ (Rose, 1990 pp.59,60).

Foucault himself invokes what he terms ‘sensorial triangulation’ where various ‘atlases’ collaborate and although he writes of hearing and touch and pathological anatomy, it makes sense to include the various inscription devices that provide still and moving pictures, traces and narratives which are now used to see, to say and to learn in medicine (Foucault, 1994 p.163) (and see Chapter 10).

But, as Foucault shows, and Rose writes

> *‘A historian of the present needs to think of thought as itself ‘technical’; the task is not one of interpreting ‘discourse’ in terms of the meanings embodied in systems of representation, but of analysing the intellectual technologies by which thought renders being amenable to being thought.’* (Rose, 1990 p.62)

This is a deeper echo of Bourdieu’s everyday instruments of knowledge and the ‘small intellectual technologies’ that Latour suggests can be traced to understand how competence is assembled (Bourdieu, 1992 p.247; Latour, 2005 p.213). As Foucault indicates learning, understanding and knowing in the clinic are closely allied, techniques of seeing and recording are intertwined and inevitably they shape and are shaped by intellectual technologies. Often it is their articulation both in the sense of demonstrating understanding through their correct reading and interpretation, and through sensory triangulation whereby different atlases or representations are brought to work together to build a picture or account of the patient that can both determine and illuminate how doctors learn to think, (see Chapter 9 *Mediation, sight, sound, touch and pain*).

Discussion: Theory and method, process and practice

Arguably Foucault’s account of the gaze, initiation into true speech and the ‘spontaneous virtues of description’ contribute to a view of medicine as a set of esoteric practices, and indeed sociologists have portrayed a separate world into which neophytes have to be inducted (Foucault, 1994 p.114; Good and Good, 1993). It is possible to discern a direction of travel in sociological accounts of medical education since Merton from a conception of socialisation largely transmitted by an elite tempered by a recognition of the existence of informal learning, via explorations of student cultures and socialisation, to a concern with the institutions in and through which they learn. There are some ontological and epistemological consequences. A non-humanist ontology, derived from

the field of science and technology studies may be particularly apposite in an investigation involving medicine which is a practice that employs science but is not infrequently referred to by its practitioners as an art or a craft. It provides a contrast with 20th century sociological accounts that since Becker, have been characterised by researchers in the field of medical education as too narrowly concerned with students' or their tutors (Jolly, 1998b p.177). These characterisations of the subjects of research in the 20th century, crude though they may be, suggest that research into medical education might profitably shift its focus away from or decentre, students and tutors (Lave, 1991). This does not mean ignoring human actors, as Latour argues it seems both peculiar and unscientific to discount human actors' accounts, but instead to recognise that tools, timetables and technologies may usefully be seen both as organising and influencing the practice and behaviour of teachers and students (Latour, 2005 p.50). This in turn entails investigating the significance of process, especially in situations where there are extended lines of communication, an approach that assumes both stability and change have to be accounted for.

It does not mean abandoning the insights which have been developed in the previous research that focussed on students or teachers. Instead this more inclusive ontology allows a fresh perspective on concepts such as uncertainty which for Fox was based on the fact that 'medicine is something less than a powerful exact science, based on nicely invariant principles', that have proved so useful in the analysis of medical education and medical work (Albrecht, 2003; Atkinson, 1981; Fox, 1957 p.214). There is a developing body of sociological work that uses close observation to demonstrate how devices such as monitors, numbers and protocols and their moral and, in some cases juridical consequences inflect medical uncertainty (Mesman, 2008; Fox, 2016). The experience and observation of medical education allows a more detailed examination of how practice and the processes used to audit it bear upon medical students' sense of uncertainty and the strategies they use to deal with it. So a perspective informed by Bourdieu and ANT would entail an examination not just of its effects on the individual, but of how uncertainty is continuously constructed, maintained or modified.

Up to a point the concern is, in Bourdieu's terms, with the mechanisms of reproduction. Knowing how those mechanisms are assembled assists a better understanding of the degree to which and more precisely how they make actors do things, i.e. what they

contribute to the activities which construct everyday assumptions about and interpretations of the world, thereby as Bourdieu suggests, turning everyday instruments of knowledge into objects of knowledge. This entails a focus on practical activity, construed not only as student learning and teaching but including processes of planning, evaluating, reviewing, assessing and reflecting, and the practices of seeing and saying that reinforce and constitute these activities, and which can draw on an approach to language and behaviour that combines the insights provided by Foucault's account of the gaze with Bourdieu's insights into language, ritual and hexis, (see Chapter 10).

The Birth of the Clinic provides a fruitful perspective on the clinical environment, and although the differences between the conception and presentation of knowledge in the university and in clinical practice described by Foucault are not the same as they were the C18th, Schön suggests that universities remain uncomfortable hosts for professional courses (Schon, 1983 p.vii). The first edition of *Tomorrow's Doctors* was designed among other things, to heal the rupture between the academy and the clinic through an integrated curriculum, and by giving students a taste of clinical practice in their first two previously 'pre-clinical' years, and this thesis traces the intended and unintended consequences of this attempt. In doing so it explores the consequences of not just the conceptual but also the institutional and physical distance between the GMC, the universities charged with the responsibility of overseeing the delivery of undergraduate medical education, and institutions that provide the clinical environments in which most of it takes place. An examination of the ways in which knowledge is gathered and deployed for and by students reveals how the tensions between the ways of seeing, saying and doing in those different environments are significant considerations in the process.

This discussion has been an attempt to apply the reflexivity urged by Bourdieu and Savage by moving away from the early and still useful concentration on actors (generally students and tutors) towards institutions and structures so as to begin to explore the utility of (communities of) practice, and particularly clinical practice, as a way of understanding medical education. The best test of efficacy may be the extent to which it succeeds in demonstrating how the practices of medical education construct and maintain the epistemologies to which Brosnan refers and so, paraphrasing Montgomery

and Groopman ‘How doctors (learn to) think’ (Montgomery, 2006; Groopman and Prichard, 2007).

4. Learning in the clinical context

This chapter examines the professional context and then at some attempts to deal with the uncertainties of practice through the inculcation of evidence-based medicine, before moving on to consider various models that have been used to understand learning in medicine. It looks at two attempts to turn a sociology of medicine into a sociology for medicine by papers that sought to introduce medical educators and maybe as Bourdieu suggests, disconcert them a little through the notion of the hidden curriculum and continues with a discussion of how novices learn science through exemplars and practical wisdom, before moving on to Schön's discussion of professional knowledge as artistry and the limitations of universities' approach to it.

The discussion then turns to physical skills, technique, and problem-setting and solving, returning to the management of information in uncertainty through reframing. After that it considers aspects of medical exceptionalism, notions about the distinctive moral norms and the 'new worlds' with which medical students are confronted, the reshaping of identity that they imply, and the notion that discourse helps to reconstruct and construct students and patients. It touches on the changes to the tutorial role caused by the demise of the firm and begins to consider how writing and speaking are implicated in the construction and presentation of cases. It concludes that a concentration on practice is most likely to elucidate the complex network of contributions to the learning environment of clinical placements.

The professional context for teaching

Good and Good wrote that not much could be expected of studies of medical knowledge 'unless they are situated, contextualised and ethnographically rich' and Atkinson calls for a 'sophisticated and sensitive phenomenology of medical thought' (Good and Good, 1993 p.83; Atkinson, 1997 p.115). Any thorough consideration of medical education should take account of the professional context in which doctors operate not only because it directly affects what is taught, but also because it affects all the other interactions that contribute to the learning process in clinical education. Most obviously factors such as NHS targets, management and the nature of the medical specialism may impact directly on clinical tutors' availability and can constrain whether, and if so how

they teach, but there are other considerations ranging from the education tutors themselves received to their (often) taken-for-granted assumptions, or ‘quasi norms’ embedded in practice as well as made explicit in teaching about how to treat patients, diagnosis and management (Bosk, 2003). At the same time it is as well to bear in mind that much of students' time on clinical placement is not spent being taught, they will be clerking patients and observing procedures and pick up their impressions of the working environment from a variety of sources. These factors combine to mould the undergraduate experience, and will impact on how once qualified, graduates are likely to act as doctors.

In common with many professionals, doctors' lives are increasingly governed by externally generated time constraints, and there is a concomitant tendency to equate shorter appointments with patients to a decline in effective care, (see Chapter 8 *Time and* timing). The changes which followed the 1970's critiques of the professions began to question professional privileges and have led to the development of mechanisms designed to ensure greater accountability (Scott-Samuel et al., 2014), (and see Chapter 6 *The context*). The drive for 'efficiency' through targets has the effect of limiting the time spent with each patient and it has consequences for medical education too.

Some have argued that the development of NHS targets shifts the balance between professional authority and bureaucratic control. Freidson argued strongly that professional experts obtained a degree of control over public affairs unwarranted by their expertise and that their status as professionals protected them against public scrutiny while Turner noted that in the past the state had been instrumental in the protection of licensed medical practice (Freidson, 1970 p.337; Turner, 1992 p.146). But now, 40 years after Freidson, many professionals in the public sector including medicine would argue that some of their power has been passed to management, and that they are subject to what Freidson would call bureaucratic logic (Freidson, 1988; Harrison and Ahmad, 2000). However it is important to be aware that this is a negotiated order; it is not uniform across the sectors and that, as Turner points out, hospitals are ‘scenes of inter-occupational conflict rather than smoothly functioning machines’ (Turner, 1992 p.157).

A number of perspectives have been applied to these developments and in different ways they too propose uncertainty or indeterminacy and the balance between them as

significant in the supposed erosion of professional control over medical work. Writing at the same time as Freidson, Jamous and Pelloille adumbrated an indeterminacy/technicality (I:T) ratio which, together with the balance of social forces and their corresponding system of legitimacy, they claim explains how professions negotiate their position and influence (Jamous and Peloille, 1970). If work can be 'reduced' to technique it only requires practice in the application of rules, whereas indeterminacy demands judgment and experience. The I:T ratio can illuminate the extent to which what Jamous and Pelloille call an apprenticeship is able to transmit mastery of 'intellectual or material instruments to achieve a given result' because if the means used can be reduced to or expressed in rules, it is easier to pass on to neophytes (Jamous and Peloille, 1970 p.112). They do not believe that any system can be governed purely by the 'values of cognitive rationality' but point out that codification opens the door to outside intervention and that it is an important move with many, frequently unrecognised consequences. It follows that by emphasising the margins of indeterminacy professions are able to maintain their own definitions of the processes with which they are concerned. They suggest that major changes to the I:T ratio are most likely when external and internal pressures combine to produce 'sudden jolts' which threaten legitimacy. So in the absence of accepted objective indicators to evaluate an activity it generally takes a crisis to bring about change, and in the UK the Shipman enquiry in primary care and Bristol, Alder Hay, Stoke and later Mid-Staffordshire in the acute sector have been stimuli for a shift to an explicitly patient-centered medicine, also apparent in the development of *Tomorrow's Doctors,* a change that springs from failure and harm to patients, (see Chapter 6).

Harrison and Ahmad explore what they term a 'decline of medical professional dominance and autonomy' (Harrison and Ahmad, 2000 p.129). They distinguish between the *micro* level which covers control over diagnosis and treatment, the evaluation of care, the nature and volume of medical tasks, and contractual independence; the *meso* level which refers to the relationships between the profession and the state; and the *macro* level where the underpinning of the biomedical model has resulted in the assumption that ill-health is largely equated with individual pathology. Drawing on work by Colwill, they say that an approach more rooted in public health was rejected in the early days of the NHS by what they see as an alliance between the profession and civil servants (Harrison and Ahmad, 2000 p.131). They argue that although the biomedical model has

survived a number of changes at the micro and meso levels, it has recently been recruited to erode professional autonomy by providing the basis for the levers of managerial control such as measures of variation in medical practice and clinical performance indicators, as well as clinical guidelines.

They go on to argue that these developments have meant that doctors themselves have to adopt managerial perspectives and that what has emerged is what they call 'scientific-bureaucratic medicine':

> *'It is scientific in the sense that its prescriptions for treatment are drawn from an externally-generated body of research knowledge, and bureaucratic in the sense that it is implemented through bureaucratic rules (albeit of a very specialised kind), namely, clinical guidelines.'* (Harrison and Ahmad, 2000 p.138).

They propose that, rather against the post-Fordist tide, scientific-bureaucratic medicine is shifting the medical labour process away from flexible production 'back' to mass production (a description that many working in other public services would recognise) and that this has the politically benign effect of controlling expenditure in a service where the control of demand is practically impossible as well as politically undesirable.

In a similar vein, Flynn describes what he terms the application of 'Neo-Taylorist' methods for the standardisation and quantification of work in the public sector from the late 1970's (Flynn, 2002). Threats to professional autonomy have come from the associated logic of treating health centres and hospitals as profit centres, and Turner also suggests that such developments may require that doctors be trained in business and commercial practices (Turner, 1995 p.138). In medicine this conception of the market both derives from and tends to reinforce the individuation of healthcare and militates against a more thorough consideration of the social influences on health and care (Scott-Samuel et al., 2014).

Flynn's exploration of clinical governance reports on studies by Hackett indicating that doctors do indeed perceive a threat to their clinical freedom, and on work by Latham and by Walshe et.al. showing that surgeons were most sceptical about changes, followed by physicians, whereas paramedics and nurses and psychologists are described as enthusiastic (Flynn, 2002 p.159). McDonald et al examined hospital doctors' and

managers' attitudes to the implementation of patient safety rules in operating theatres and their findings demonstrate that surgeons and anaesthetists do not believe that their work could let alone should, be rule-governed, and these specialist-specific responses are echoed by Waring (McDonald et al., 2005; Waring, 2007). These findings illustrate how unpredictability (indeterminacy in Jamous and Pelliolle's terms) is central to the way these doctors conceive of their work and the pride they take in being able to deal with unforeseen circumstances whether caused by inevitable variations in patients' anatomy, or failures of organisation or equipment.

Schön argued that the professional failures in the 1960's and 70's led to increasing mistrust of the professions (Schon, 1983). He suggested that the rationalisation of medical care would reshape the role of the physician and he conceived of practice not so much as problem-solving but as dealing with situations characterised by 'uncertainty, disorder and indeterminacy' (Schon, 1983b p.15) (and see and Chapter 10 *Understanding learning in the clinical environment*). He encapsulates medicine's difficulty by quoting Erikson's description of each patient as 'a universe of one' and argues that these characteristics make it difficult for a professional either to describe or to teach how they deal with situations with which they are often confronted. Schön says that many practitioners have become so skilful in the use of techniques such as selective inattention and control that they effectively suppress intimations of uncertainty which is seen as a threat; its admission as a sign of weakness, (see chapter 9 *Restraint and Uncertainty*).

Individual experience and clinical practice

Freidson states that the practice of medicine is to apply rather than contribute to science and that medicine continues even when a reliable scientific foundation for intervention may be lacking because the medical imperative is usually to do something rather than nothing (Freidson, 1970 p.163). He and others stress the primacy of first hand clinical experience in medicine, saying that when work requires practical application to concrete cases it is impossible to maintain the mindset of the scientist. He goes further, saying that medical practitioners come to rely on the evidence of their own senses 'independently of the general authority of tradition or science'. He writes, 'Thus a thoroughgoing particularism, a kind of ontological and epistemological individualism is

characteristic of the clinician' (Freidson, 1970 p.170). He avers that generalisations from clinical experience are frequently 'personal mythology' based on one or two instances or on stories from colleagues, a tendency also noted by Atkinson, and illustrated by the example of the 'supersurgeon' Macchairini that led to the Swedish government's dismissal of the board of the Karolinska Institute in September 2016, (Lindquist 2016), (and below Atkinson, 1995 p.58). For Freidson then, individualism is the dominant element in the orientation and behaviour associated with the clinical mentality

Freidson suggests that clinicians become so convinced of their unique abilities to deal with what he calls perplexities and complexities that they think they can solve all human problems. 'The clinical practitioner is inclined to use particularistic standards in evaluating his own work and is typically led by his relations to laymen to play a pontifical functionally diffuse role, one not modestly limited by training or qualification.' He says that whereas scholarship and science require publication and the associated scrutiny, the consulting practitioner's work and results are 'seen almost as a form of private property' (Freidson, 1970 p.183).

This form of individualism 'minimises the value of basic scientific knowledge and the methods by which it is established and maximises the value of individual opinion based on close personal experience with individual cases' (Freidson, 1970 p.191). Furthermore

> *'The consulting professions in general and medicine in particular encourage the limitation of perspective by its members through ideological emphasis on the importance of first-hand, individual experience and on individual freedom to make choices and to act on the basis of such experience. Such emphasis is directly contrary to the emphasis of science on shared knowledge, collected and tested on the basis of methods designed to overcome the deficiencies of individual experience, and its efficacy and reliability are suspect.'* (Freidson, 1970 p.347)

This type of first-hand knowledge Freidson says, often goes by the name of wisdom.

Freidson's re-description of the primacy of personal experience as epistemological individualism and the conclusions he draws may be thought to manifest a rather strong version of the existence and consequences of aspects of clinical reasoning, but Atkinson and Bosk's ethnographies also bring out the significance of individual experience in

medical practice (Atkinson, 1997; Bosk, 2003). Bosk argues that the uncertainties of medicine lead to dogmatism, one expression of which is the quasi-normative errors specific to individual surgeons that house staff in training have to avoid (Bosk, 2003 p.61). Atkinson's study of the work of haematologists argues that Freidson identified the most important feature of a culture that celebrates individual autonomy, and that it accounts both for the continued use of knowledge which might be otherwise discredited, and for practitioners' resistance to innovation (Atkinson, 1995 p.48). This faith in the primacy of first hand perception and personal experience leads to the 'clinician's certainty that his or her knowledge is unassailably warranted by the touchstone of experience' (Atkinson, 1995 p.197). His study of haematologists describes how the clinical reasoning process itself is grounded in the practices and habits of specific places and clinical teams. It is amply demonstrated by the fact that this reasoning is conducted in spoken form and significantly that this speech tends to feature aphorisms, proverbial formulations and maxims (Atkinson, 1995 p.147). In his examination of medical education, Atkinson found expressions of personal preference and experience to be recurrent themes in clinical discourse and clinical instruction, and he says that personal knowledge is granted special privilege and direct experience 'is taken to guarantee knowledge that the student or practitioner can *rely* on' (author's stress) (Atkinson, 1995 p.115). He also noted that the propensity to employ personal narratives and reminiscences in daily rounds was more prevalent among senior clinicians.

Uncertainty and evidence-based medicine

In 1959 Fox identified two basic types of uncertainty in undergraduate medical education: incomplete mastery of available knowledge and the limitations of medical knowledge itself, and said students find it difficult to distinguish between them (Fox, 1957 p.207). They find ways of dealing with uncertainty through experience and technique but they see that their tutors are subject to it and recognise that what they need to know comes from them rather than from books, through 'listening to experienced doctors reason out loud' (ibid. pp 214,223)

Invoking Fox's notion of uncertainty Timmermans and Alison discuss training in Evidence based Medicine (EBM) exploring how it is managed by doctors (Timmermans and Alison, 2001). They see EBM as a paradigm shift that proposes the replacement of individual

clinical experience and authority with 3 tenets: 1. the integration of research-based information in clinical practice, 2. the recognition that pathophysiology is insufficient for clinical medicine, and 3. the need to acquire and use statistical and methodological skills to evaluate studies. In their interviews with residents (i.e. qualified graduate doctors still in training, equivalent to the UK Foundation years) they discovered that their respondents thought that medicine was moving towards EBM, and that this impression had been reinforced by the fact that their supervisors would routinely ask them to bring forward evidence to support decisions.

Timmermans and Alison suggest there are two groups which they label 'librarians' and 'researchers', of which there were 11 and 6 respectively in their sample. The librarians expanded the source material for EBM, using textbooks, guidelines and review articles, skimming the methodology to focus on the conclusions; for them evaluating an original study was too time-consuming. This process is carried to its logical conclusion by Tseng et al who have developed an automated text-mining system to determine the evidence level provided by a medical article (Tseng et al., 2007) Researchers, the minority, actively evaluate and interpret the literature using statistical criteria to distinguish between studies and to assess recommendations.

Timmermans and Alison view what they describe as Fox's sociology of knowledge as a 'gradual socialisation in medical confidence', and suggest that what new doctors are really learning is not to blame themselves for clinical mistakes and how to manage medicine's inherent limitations, 'Training for uncertainty serves to imprint a professional attitude of objective expertise and detached concern on the next generation of physicians', echoing what Fox calls a 'manner of certitude' that students pick up in their clinical years because they cannot afford to show doubt openly, (Timmermans and Alison, 2001 pp.347-8; Fox, 1957 p.223) (and see Chapter 9 *Restraint and uncertainty*).

As they note, there is some disagreement among sociologists about the extent to which it is useful to see uncertainty as the hallmark of the field. What they propose is that the reliance on literature, guidelines and protocols really constitutes an expansion of the uncertainty that doctors already have to manage, so they call it 'research-based uncertainty'. Their respondents were not confident in their abilities to search for relevant articles or once they had found them, in their skills of evaluation, and they dealt with this

through the use of journal clubs, refresher courses and inviting guest speakers, i.e. through social support and reinforcement. Whereas the librarians found comfort in practising EBM through guidelines and review articles, researchers derived no comfort from these supports and feared that reliance on these aids could encourage complacency. Both librarians and researchers gave credence to the notion that EBM paradoxically leads to a re-appreciation of clinical judgement and listening to patients.

In parallel with findings from Bhandari's work on surgeons (see below), Timmermans and Alison's respondents were quite clear that EBM had done nothing to democratise the relationship between themselves and their superiors, only in emergencies would they decide on treatment without consulting them, and they tended not to challenge their sometimes outdated views. Hierarchical differences remained and could not be ignored. Nevertheless 'The quality that guides clinical decision-making ... is not the tradition-bound experience put up as a straw person in the medical and sociological literature but a mixture of skills and uncertainties grounded in medical knowledge that could more accurately be described as *evidence-based clinical judgement*' (Timmermans and Alison, 2001 p.354) authors' stress.

So like Good and Freidson, Timmermans and Alison find that medicine blends the social, the symbolic and the technical into new configurations. They point out that the sociological literature sees uncertainty as a personal condition whereby trainees move from uncertainty to control, rather than as a process of gaining expertise, and they think that seeing uncertainty and control as opposing personal characteristics tends to individualise the acquisition of knowledge and reifies the concepts as fixed states. It is they say, impossible to control uncertainty in medicine and what they call 'retooling' leads to the conclusion that

> *'EBM's standardisation urge neither eradicated nor reinforced but transformed uncertain medical knowledge. Evidence-based medicine's legacy crystallises in the honing of evidence-based clinical judgement and is as apparent in disregarding and avoiding research as it is in protocol following and routine research consultations'* (Timmermans and Alison, 2001 p.356)

Engebretson et. al. argue that EBM's promotion of standardisation has inhibited clinicians' reliance on their clinical judgement and reasoning because for them

uncertainty prompts a search for new knowledge, ‘uncertainty is not a regrettable and unavoidable aspect of decision making but a productive component of clinical reasoning.’ (Engebretsen et al., 2016 p.1). Using the example of one of the author’s experience in A&E, and drawing on another’s taxonomy of uncertainty they show how attending to uncertainty can be creative in decision making, producing insights through questioning the situation, beliefs, and what they call anticipations. They say that clinical insights are based on the possibility of their own inversion, through the understanding that results or conclusions may be wrong, or that they can lead to looking in the wrong place or asking the wrong questions. Reflecting back on one’s own methods of enquiry is likely to enhance objectivity. Although their example is of an experienced individual interrogating a situation and her own conclusions it may be seen as a worked example of Foucault’s restraint of clinical discourse, combined with Schön’s notion of reflection, see below and Chapter 9 *Restraint and Uncertainty*

Embedding evidence based practice

Other studies have explored the most effective ways to get both students and practicing clinicians to take more account of evidence in their work, be it through lectures, workshops, or projects, and how it has affected students’ and qualified doctors’ approaches to uncertainty (Goldenberg, 2006; Fox, 1957). Of 2 studies which looked specifically at surgeons, one, by Bhandari et. al is concerned with their training, and another by Pope with everyday surgical work (Bhandari et al., 2003; Pope, 2003). Bhandari reports that trainees are reluctant to introduce new ideas and techniques because they anticipate being ignored, or in one reported case ostracised. Older surgeons' egos, rigidity and insecurity were mentioned by respondents as barriers to their introduction, supported by comments about the time it takes to search the literature or to master new techniques. It emerges that the best way to establish evidence based practice in these environments is for it to be role modelled in normal clinical activity.

Pope's exploration of surgical practice stresses its inherent variability due not only to the peculiarities of patients' anatomies but also the surgeon's own preferences, abilities and emotional state at the time. Surgical respondents mention instinct and feel (literally and metaphorically) and say that it can't be taught. Respondents were inclined to separate everyday practice from the standardised procedures that usually characterise written

sources of evidence; everyday practice more often involved complications and co-morbidities that are excluded in written accounts, and if there was conflicting evidence surgeons were inclined to fall back on their own experience. Pope makes the point that what she terms the 'rational-technical thrust' of EBM does not sit well with the contingent nature of everyday practice and concludes that evidence-based practice itself 'has helped to create and sustain the idea that evidence and practice are diametrically opposed' (Pope, 2003 p.279).

EBM/EBP and the associated skills of critical appraisal stand a better chance of acceptance by doctors if they are somehow integrated into clinical practice. Coomarasamy and Khan looked at postgraduate education and found there was weak evidence that standalone courses improved the skills of critical appraisal, but that an integrated approach did lead to gains (Coomarasamy and Khan, 2004). As far as attitudes were concerned they say that there is 'compelling evidence that teaching integrated into clinical practice changes attitudes about the role of EBM or critical literature appraisal in medicine, while a standalone approach does not' (Coomarasamy and Khan, 2004 p.1018). They note the difference between the motivation of postgraduate students, driven they suggest by information's relevance to clinical practice, and undergraduates whom they see as driven by the curriculum and examinations, what Lave and Wenger refer to as use value and exchange value respectively (Lave, 1991). In the same journal Del Mar observes that role modelling is probably also necessary, and social reinforcement is picked up by Horbar et. al. who argue that collaboration through social networking, workshop exercises, and discussions were all helpful, concluding 'A multifaceted collaborative improvement intervention - including audit and feedback, evidence reviews, quality improvement training based on four key habits, and follow up support - changed the behaviour of neonatologists and promoted evidence based practice' (Del Mar et al., 2004; Horbar et al., 2004), Timmermans and Mauck contend that attempts to introduce evidence-based guidelines show that they are only partially successful at changing doctors' behaviour and argue that their introduction needs to take account of the collaborative nature of medical work (Timmermans and Mauck, 2005), (and see chapter 11 *The changing nature of clinical practice*). Successful attempts to change treatment guidelines convened interdisciplinary teams to review the evidence and modify the guidelines and criteria, sometimes through consensus conferences (ibid. pp.24,25), (and see:Solomon, 2015; Waring, 2007)

In primary care Gabbay and le May did not find any practitioner who went through what they call the ‘linear-rational model of evidence based health care’. Instead they took shortcuts to get the best evidence from sources they trusted (Gabbay et al., 2004 p.1014). Gabbay and le May call the ‘collectively reinforced, internalised guidelines’ that their respondents used 'mindlines' and describe them as informed more by interactions with colleagues, patients, and pharmaceutical representatives, buttressed by tacit knowledge which is itself built on their early training and subsequent experience, than they are through reading (Gabbay et al., 2004 p.1014). Mindlines are not fixed, but can be modified or negotiated in response to further discussions of a particular case with colleagues or sometimes with patients themselves. In his examination of attempts to introduce guidelines and ‘decision support’ into General Practice Howitt points to the conflict between doctors’ sense of professional autonomy and patient-centeredness (Howitt and Armstrong, 1999 p.1771). His interviews show the distance between how doctors match drugs for their patients and the evidence from clinical trials, and they illustrate why a simple intervention is unlikely to affect their decision-making.

A collective approach is examined in Sinclair’s case study of how EBM has been incorporated into psychiatric training where he notes that others have described the challenge EBM poses to doctors’ personal experience and ‘eminence-based medicine’ (Sinclair, 2004). He explains that the Royal College of Psychiatrists introduced a critical appraisal paper into its membership examination and required training schemes to hold in-house sessions consisting of clinical case conferences and journal clubs to teach trainee psychiatrists about EBM. Sinclair notes that these are called ‘academic’ sessions and argues that the activities in these sessions are ritualised because they are set apart from everyday practice and are repetitive, dramatic and use special terminology. At the same time these EBM sessions are constructed in such a way as to share the epistemological certainty of other areas of medical training (he uses the example of anatomy) and this is done through the establishment of a set of questions to be asked of any study depending on its methodology. This is a familiar pattern in medical training and practice where, for example, there may be a set of relevant questions, or a ‘script’ used for patients who present with particular conditions, and also protocols for their treatment (see Chapter 10). Sinclair suggests that any challenge EBM might once have posed to the assumptions of Western medicine has been effectively neutralised by its separation from the clinical environment, even though it draws on traditional assumptions

about teaching and learning on ward rounds. He argues that this type of ritual activity implies that it is theoretically possible to create a study whose conclusions would be definite, i.e. scientific truth is 'out there', all that's needed is more (and better) research. But the EBM sessions' labelling as academic and their separation from clinical practice mean that questions about clinical implications are bracketed off, and he argues that unless the effects of EBM teaching are assessed as part of a clinical rather than a written exam, EBM is likely to retain its academic and ritual nature and it will continue to be marginalised in clinical practice, (see Chapter 7 *Assessment, form and legitimacy*).

The Engebretson paper provides a useful reminder that uncertainty is not always a bad thing and can drive enquiry, but it draws on the example of an experienced clinician, and the other subjects in the literature considered here are postgraduate trainees whose situations are different from undergraduates on clinical placements. Clearly experience is an antidote to uncertainty but the Engebretson paper acts as a warning about the complacency that may accompany experience: the congruence with both Foucault and Schön's accounts, and its invocation of the glance is striking. Taken together these sources indicate that uncertainty varies with the community of practice in which it is embedded, but there are some lessons which may be applicable across different situations.

The evidence about introducing EBP and EBM to qualified doctors is as instructive for what it uncovers about day-to-day medical practice and how doctors assimilate information or knowledge, as for what it says about how it is used in practice. Timmermans and Alison are not saying that research and evidence have no effect on clinical practice, but that doctors may not themselves always interrogate the journals in which it appears. Evidence which has been rigorously tested can be part of a mix which includes clinicians' and colleagues', peers' and superiors' experience as well as considerations of patients' wishes, available resources and so on; i.e. embedded in the community of practice. These accounts of doctors' exposure to and use of evidence indicates that there is frequently a 2-step flow of communication more often than not based on discussion, (Timmermans and Mauck, 2005 .24).

The studies suggest that the successful implementation of EBM or EBP depends on how they are introduced into working and learning environments. In postgraduate training in

the acute sector, inter-professional interaction and opinion leadership play a significant part in the application of knowledge in practice, i.e. communities of practice are fundamental to the introduction of evidence based health care (Lave, 1991). For different reasons there is an underlying assumption about the opposition between evidence and practice and there are differences in context: the salience of hierarchy in surgery, and the contingencies of treatment which will include patients' individual needs, and in some circumstances the doctor's own experience and competence.

Turning to training specifically, these accounts indicate that it (in this case EBM training) is most likely to be effective when it is integrated into the clinical environment. The notion of integration will be revisited in the discussion of the curriculum and assessment in Chapter 7 *Professional learning and assessment*, but this discussion shows that clinical practice does not simply reinforce practices in a Kolbian sense but legitimises them, and the utility of a given practice is most likely to be judged in relation to its connection with as well as relevance to the clinical situation.

EBM and EBP is seen as an approach to the management of uncertainty throughout medicine, but the discussion indicates that doctors and students may employ other strategies to convey a professional attitude of objective expertise and detached concern or '*manner* of certitude', strategies that depend on the configuration of the environment in which they encounter uncertainty, to convey the experience they bring to bear on it (Fox, 1957 p.223). This thesis will identify aspects of the community of learning and practice in undergraduate education that confirm Fox's analysis and suggest others that bear upon students' situation in today's undergraduate medical education.

The examples show how attempts to 'bolt on' evidence-based practice can founder on the social realities of medical work: on the one hand especially in the case of surgery, the hierarchies that inhibit it, and on the other the social networks that substitute for it. Following Timmermans and Alison they suggest that, far from eroding the uncertainties of medical practice EBM may only add to them and reinforce the reliance on clinical observation and judgement to produce evidence-based clinical judgement (Timmermans and Alison, 2001 p.354). They also argue that it is not helpful to see uncertainty and control as personal characteristics, better to concentrate on how uncertainty is managed

and following Fox, they suggest that medical education is a gradual socialisation in medical confidence (Timmermans and Alison, 2001 p.355).

The hidden curriculum

The notion of the hidden curriculum has been used in attempts to bridge the gap between medical education and social science and to alert medical educators to the mode of teaching and the learning environment (Stacey, 1992; Bloom, 1995). It has been used in journals for medical educators as an optic for decoding the learning environment, as a 'black box' for unspoken truth, and as a means of producing 'lightbulb' moments for students revealing how they pick up behaviour (Hafler et al., 2011; Tekian, 2009).

In *Academic Medicine* Hafferty identified at least three interrelated spheres of influence: the stated curriculum, an informal curriculum comprising the ad hoc and personal interaction between staff and students, and the hidden curriculum itself which is 'a set of influences that function at the level of organisational structure and culture' (Hafferty, 1998 p.402). He writes, 'that which is produced, be it recorded on paper, transmitted electronically, or anchored in cement, has an existence and therefore an impact, independent of its implementation or operational presence' and he suggests four areas where the impact of the hidden curriculum may be discerned: policy development, evaluation, resource allocation and institutional 'slang', and says the informal curriculum is communicated outside formally identified learning, in the lift, the corridor, and the cafeteria (Hafferty, 1998 p.404). Conscious of his audience he warns that the revelations that emerge from the analysis of the hidden curriculum may 'appear decidedly strange, shocking or outlandish to outsiders' and, echoing Bloom, urges that 'we' accept that medical training is 'at root, a process of moral enculturation' (Hafferty, 1998 pp.405,406).

In an article in the *BMJ* Lemp and Seale also use the notion of the hidden curriculum to frame medical students' perceptions of teaching (Lempp and Seale, 2004). They define it as the set of influences that function at the level of organisational structure and culture including, for example, implicit rules on how to survive the institution such as customs, rituals and taken for granted aspects. They refer to the history of reform without change and to the processes of enculturation and draw attention to unscheduled changes, poor teaching skills and the use of humiliation in teaching on the wards.

In a later piece written for a sociological audience in *The Handbook of the Sociology of Medical Education* Hafferty and Castellani observe that that the popularity of the hidden curriculum in the 1990's was another result of the medical profession's fall from grace and that it is often linked with professionalization; which has become a 'cottage industry … devoted to core definitions, assessment, professionalization as core competence etc.' (Brosnan and Turner 2009 pp.20,18,30). They note the continuity with Merton's distinction between manifest and latent functions and the parallels with Goffman's front and back stage but acknowledge that the notion of the hidden curriculum focuses on individuals rather than schools, and they clarify previous observations about the informal curriculum saying that the hidden curriculum should not be identified with particular settings (Brosnan and Turner, 2009 pp.26,22,24). They argue for a complexity science perspective to cope with the fact that medical education is not just delivered by medical schools but formed by the intersection of formal, informal, hidden and null types of curriculum and they note the amount of time that students spend learning the ropes, presumably including the quasi-norms pertinent to each rotation, displacing the learning of clinical skills (Brosnan and Turner, 2009 pp.32,33).

The hidden curriculum hardly presents the challenge to the epistemological values of medical educators that Brosnan suggests is necessary to understand medical education, rather it risks becoming a vague residual category devoid of sociological import. It may be useful as a label to identify the complexity of the teaching and learning environment, and as a framework to situate student perceptions, but it is overly reliant on a model of moral enculturation and as Hafferty and Castellani admit, it focuses on individuals rather than on schools as an operational force (Brosnan and Turner, 2009 p,22).

This thesis focuses on the environment as Bloom and Hafferty suggest but it also proposes that medical education cannot be understood in isolation from its institutional context such as the regulator's attempts to capture the goals, objectives and outcomes of medical education and the roles of the universities and the NHS. It argues that the use of the encompassing ideas of the hidden curriculum, moral enculturation and indeed culture itself, being somewhat akin to Savage's master variables, may serve to obscure rather than illuminate what happens in clinical placements.

Although tracing the implications of *Tomorrow's Doctors* reforms does require an analysis of the written word as Hafferty suggested, its enactment through the curriculum demands close observation of teaching and learning in clinical placements to identify how in his terms the formal, the informal and the hidden interact, conflict and coalesce to structure students' experience. Addressing complexity requires careful tracing of the effects of curriculum change, for example how the integration of the curriculum around body systems led to a system of rotations which in turn has consequences for the assessment of students, their mobility between different healthcare providers, and the predictability of the cases that they see, and how all these elements come together to produce practice in clinical placements.

Tomorrow's Doctors may be understood as an attempt to make explicit some of what had been in the hidden curriculum of the apprenticeship system of the firm. Certainly it means that unlike investigators in the 20th century, researchers examining new medical schools are able to exploit its specification of the outcomes that medical students should achieve to be allowed to qualify as doctors, and they can draw on the GMC's system of assurance designed to ensure that medical schools' curricula match it. But it remains the case that outcomes can only be a starting point for the exploration of how staff and students transmit, acquire and utilise the experiences and knowledge to which they are exposed. Outcomes do provide benchmarks in an environment formerly characterised by uncertainty and some obscurity, but it would be naive to presume that they are capable of providing a comprehensive account of what let alone how, students learn. Indeed it may be that outcomes encourage a degree of complacency through a misplaced faith in accountability: that curricula designed around them will produce good doctors. Outcomes are not a necessary condition for the training of good doctors, and few would claim that they were sufficient, arguably they have as much to do with accountability as they have with learning.

To see why, it is necessary to review more of the literature relating to professional and practical knowledge and reasoning, embodied knowledge and the sometimes unexpected and counterproductive consequences of learning to practice. Does learning to practice medicine, as Good suggests mean that students come to 'inhabit a new world', and what material can we draw on to understand this process (Good, 1994 p.70)?

New meanings, new worlds

Good and Good draw attention to the enduring presence of the anatomy lab which has, as they put it ‘distinctive moral norms’ and gives the human body new meaning (Good and Good, 1993). They see the cadaver sawn in half as a particularly striking illustration of how a person becomes an object of the medical gaze (Smith and Kleinman, 1989 p.58). They agree with Schön and others that in order to assume their identity as physicians, students have to redefine their personal boundaries, and at the same time must learn to ‘invade’ others’ bodies and personal lives. Schön indicates that the difficulties experienced by medical students may be shared by other students learning to practice where, amid the uncertainties they face, they can lose their sense of competence, confidence and control during the necessary process of unlearning knowledge that they feel they may never recover (Schon, 1987 p.95). This loss of control is likely to be followed by feelings of vulnerability and dependency which can turn into defensiveness (Schon, 1987 p.166). Beagan reports for example that succeeding as a medical student meant the sacrifice of other relationships; 44% of her survey respondents felt they had lost touch with who they were (Beagan, 2000 pp.1257,8).

Good and Good suggest that American medical culture reifies the domains of what they call scientific focus and human values through the juxtaposition of two key symbols: competence and caring (Good and Good, 1993 p.91). They write that students’ common-sense views of the patient as well as their own personal boundaries have to be ‘reconstructed’ before they can become competent physicians and that this requires them to deal with the contradictions inherent in remaining caring whilst encountering the world of medical science. One of the difficulties is that these dimensions are associated with different discourses, competence with the language of science and caring with the language of values, (and see: Bloom, 1988). They examine the reconstruction not only of the person as the object of the medical gaze, but also of the student’s personal boundaries and common sense. Cribb and Bignold refer to students’ development of 'bilingualism' and the extent to which doctors' induction into the language of science and professional identity may alienate them from the lives of their patients (Cribb and Bignold, 1999), (and see chapter 10).

Good and Good elucidate how, usually after they have learned to 'see' in the pre-clinical years, and once they are more exposed to patients in the clinical years, medical students then learn to write and to speak (Good and Good, 1993). They point out the write-up is not simply a record of a conversation with the patient, the need to provide it constructs the interview (what in the UK is called history-taking or consultation). The write-up (in the UK clerking) becomes the foundation for the clinical view of the patient, used by others to make decisions about treatment (Berg, 1996; Forrester, 1996 p.10). The tool of the write-up is also used to assess students, and assessment is significant, probably overly significant as a driver for medical students. As the quotations from Good's interviews with students illustrate, the interview and the write up are a means of tidying a diffuse reality and gradually as they progress through their training, the categories of the interview come to structure students' ways of thinking, (see Chapter 10). Good's quotations show clearly how these processes build students' sense of entitlement and serve to underline their significance as a rite of passage and a fundamentally formative experience.

Good's argument is that the detailed language of medicine and the cellular and molecular levels used to explain and classify diseases creates new and interconnected worlds for medical students, learning medicine 'is a process of coming to inhabit a new world' (Good, 1994 p.70). However Forrester rather punctures medical and scientific exceptionalism suggesting that Kuhn thought that learning to inhabit a new world consisted in knowing how to manipulate discrete problems, but that this is common to learning to be a member of a scientific community in much the same sense that a plumber or electrician coming to your home inhabits worlds of pipes and wires that are not easily shared or explicable, i.e. the existence a new or different world is common to a number of trades (Forrester, 1996 p.7).

Reasoning in cases and artistry

Forrester proposes a style of reasoning which he calls 'reasoning in cases' dominant in psychoanalysis which is his central interest, but also in medicine and law, disciplines characterised by their concern with individuals (Forrester, 1996 pp.2 and 3). He draws on Kuhn's notion of exemplars to consider how novices learn their science through extending and reproducing 'exemplars' and turning a novel situation into a version of

them (Forrester, 1996 p.7). Kuhn introduced the term exemplar 'to indicate more clearly the way in which shared examples are what ground the productive collective labour of a scientific community', they are 'models, particularly grammatical models of the right way to do things' and they are acquired through education without the students needing to know what characterises them as community paradigms (Forrester, 1996; Kuhn, 1977 p.298; Forrester, 2007; Kuhn, 1976 p.47). It is through exemplars that scientists learn their science, they are the standard problems that define the field of research and a body of knowledge and by working through them and reproducing them students turn novel situations into versions of well-understood exemplars (Forrester, 1996 p.7).

Drawing on Foucault's account of the 'examination' in *Discipline and Punish,* Forrester shows how the case history preserves the individual's particularity and at the same time makes it public and scientific (Forrester, 1996 p.10). The examination results in what Foucault refers to as 'a network of writing' that captures the individual, and it is these documentary techniques which allow the individual to be described and compared. The 'examining apparatus', tabulating and arranging facts, was an essential condition for the 'epistemological thaw' of medicine and the sciences of the individual in the late C18^{th,} so it is these techniques that we must examine if we wish to understand the creation of a new type of power over bodies (Forrester, 1996; Foucault, 1977 pp190-1), (and see: Rose, 1990), and Chapter 2.

Forrester points out that, as mentioned in the Introduction, Foucault saw the proliferation of technologies of power apart from the law as a mark of modern society, and the hospital, the school and the prison as pivotal institutions in its production and the knowledge of the individual within it (ibid. p.12; Foucault, 1977 p.194)

> *'We are in the society of the teacher-judge, the doctor-judge, the educator-judge, the 'social worker'-judge; it is on them that the universal reign of the normative is based; and each individual, wherever he may find himself, subjects to it his body, his gestures, his behaviour, his aptitudes, his achievements*. (Foucault, 1977 p.304)

Forrester identifies a resurgence of the narrative of the single case in the C19th, boosted in the C20th by the use of the clinical case as a pedagogic tool, as an essential element of medical practice: this he suggests is the clinical equivalent of Kuhn's exemplar

(Forrester, 1996 pp.13,14). The case method of teaching, often known as the Socratic method requires students to argue against one another with the teacher intervening as necessary. He notes that students tend to be reluctant to discover the best arguments on their own, they complain that their teachers are not doing their jobs and yearn for traditional didactic methods (Forrester, 1996 p.16), (and see in Chapter 7 *GMC visitors' report 2003-4*). He argues that the case method leads to group analysis where the learning process itself assumes a certain significance, and so sensitivity to group dynamics, i.e. the community of practice, becomes an essential part of this type of teaching.

Forrester analyses the way in which problems in textbooks show students how to do science, providing model ways of asking questions as well as model answers (Forrester, 1996 p.7).

> *This is not a question of applying explicit general principles to specific instances; the general principles are not fully articulable, and not therefore subject to critical scrutiny. One might say that a scientific discipline is automatically protected against excessive self-critical and sceptical questioning by its axioms and fundamental tenets being embodied in practices founded in tacit knowledge which cannot be rendered into propositional and thence universal form; this tacit knowledge, this practical wisdom is absolutely necessary'* (Forrester, 1996 p.8)

Kuhn indicated that textbooks were a way to understand how scientific knowledge works and the general principles they make explicit are what Forrester refers to as 'window dressing' on the real acculturation process. In fact it is exemplars that show students how to do science, they internalise the ways of 'carrying on', how to recognise a problem and turn it into an analogue of one which has already been solved, to see situations as like one another, so they 'acquire(s) the tacit knowledge involved in bridging the gap between the paradigm and the unknown object of research' (Forrester, 1996 p.7)..

Forrester observes that the narrative of the single case became more prominent in the early C20th when the model of the clinical case was introduced as a pedagogic tool (Forrester, 1996 p.14). The case method of teaching, particularly appropriate to English and American law based on precedent, was introduced to Harvard Law School in the 1870s, and required students to discover and trace the 'the entire *i*mplicit rational system

of law embodied in cases' (Forrester, 1996 p.15). It was later adopted in medical teaching at Harvard both in the university and the teaching hospital.

Schön wanted to, as he puts it, turn the problem of the approach to professional knowledge, so often described but effectively obscured by terms such like 'intuition' 'talent' etc., on its head and so calls for close examination of what he terms 'artistry' conceived of as the competences which may or may not employ technical rationality, that practitioners use to deal with indeterminate situations (Schon, 1983 p.9). Technical rationality is based on an objectivist view that beliefs are testable with reference to facts which he contrasts with the constructivist view where 'our perceptions, appreciations and beliefs are rooted in worlds of our own making that we come to *accept* as reality', his stress (Schon, 1983 p.36).

Schön was convinced that universities were wedded to what he terms an epistemology of practice which eschews the consideration of practical competencies and artistry and leaves us unable to explain, let alone describe significant competences (Schon, 1983). He identified a model of technical rationality that sees professional activity as problem solving, its rigour bolstered by the use of scientific theories and techniques (Jackson, 1970; Schon, 1983 p.21). He accounts for the acceptance, indeed dominance of this view by arguing that technical rationality is 'the Positivist epistemology of practice' and that it became established in the late 19th and early 20th century (apparently with the exception of Law at Harvard), a period when the creation of professional schools in universities coincided with the high tide of positivism (Schon, 1983 p.27; Forrester, 1996 p.15). He uses this coincidence to explain the distinction which he argues has become institutionalised between the proper role of the university and the work of professional schools. His work suggests that professional education based in the universities should effectively distance itself from its path dependency on the (implicitly outmoded) positivist tradition and learn from what he terms the 'deviant traditions' that educate students to practice, and incidentally have entered the academy more recently, such as those in art and design and sport. His observations are interesting here because medicine and medical education exhibit the difficulties which attend combining elements of scientific understanding and technical rationality and an essentially positivist approach, with the uncertainties of clinical practice and experiential, sometimes 'embodied' or 'performative' modes of learning that are also characteristic of education in the arts and sport.

Technique, reframing and tools

As already established, Schön is not alone in thinking that practice in general consists of problematic situations characterised by 'uncertainty, disorder and indeterminacy' as distinct from problems to be solved (Schon, 1983 p.15). Professionals don't find it easy to describe let alone teach how they go about, as Schön puts it 'making sense of uncertainty, performing artistically, setting problems and choosing among professional paradigms when these processes seem mysterious in the light of the prevailing model of professional knowledge' (Schon, 1983 pp.19-20). If a model of technical rationality cannot account for what Schön terms practical competence in divergent situations, then he suggests that we search for an epistemology of practice which is implicit in the artistic and intuitive processes which practitioners do use.

Schön draws attention to the fact that outside the laboratory problems themselves have to be constructed from uncertain and puzzling situations, whereas technical rationality sees professional practice as a form of problem solving and ignores the process of problem-setting, the ends that are to be achieved (Schon, 1983 p.38). He uses the phrase artistic performance to describe a practitioner's apparently spontaneous response to the complexity she faces. Large amounts of information are managed selectively and a skilled practitioner is able to 'spin out long lines of invention and inference', holding a number of possible perspectives in mind, maintaining the flow of the investigation to try to fit a situation into their hypotheses whilst remaining open to the possibility that it will not fit completely, exercising the restraint to which Foucault refers (Foucault, 1994 p.xix; Schon, 1983 p.130). This process, often referred to as 'pattern recognition', according to Whitehead considered as the dominant mode in medical diagnostic thinking, properly should avoid both self-fulfilling prophecies and the neutral hypothesis testing of the controlled experiment with its associated assumptions about observer neutrality and the consideration of disconfirming data (Whitehead, 2010).

Schön uses the term 'reframing' to try to capture this process; unique situations are understood if attempts are made to change them and at the same time they are changed by those attempts to understand them (Schon, 1983 p.132). He refers to 'frame experiments' which impose coherence on messy situations and test the consequences and implications of the frames being used. Schön expresses it by saying that situations

'talk back', which in turn can lead to further reframing that may reveal new dimensions and new possibilities to discover some coherence, congruence or new meanings. As his book titles indicate Schön is concerned with the reflective practitioner, and in particular with what he terms reflection-in-action where the practitioner becomes 'a researcher in the practice context', unbounded by what he calls the dichotomies of 'Technical Rationality' (his capitalisation) (Schon, 1983 p.68). He mentions some of the tools which practitioners employ to capture and manipulate situations: in the cases of architecture art and design, the sketch or drawing is used to think, and he generalises to the media and language which provide tools for reflection, and to the feel for them which practitioners acquire.

Such tools are of course also highly significant in the teaching process. They are not only used to convey information to students, students' use of them indicates competence, and assessment is often designed to test the extent to which students can use the media, language and the tools used by practitioners. The nature of practice is such that it is impossible to convey the art of practice merely by describing procedures, rules or theories or even ways of thinking to a student; the student must share a feel for, and eventually themselves use, the media and language of practitioners. These tools can, indeed should, also shift perceptions and lead to new explanations and inventions. An example is what Schön calls generative metaphors, such as the brush as a pump: in medicine the same metaphor is applied to the heart. However, Schön says we don't know enough about how people develop the feel for language and repertoire which informs their reflection in action and that it's a promising topic for research: this thesis is intended to be a contribution to that research (Schon, 1983 pp.271-2).

Schön speaks about 'the hunger for technique' characteristic of students of a profession, and it is certainly noticeable that medical students are very keen to acquire clinical skills such as venepuncture or suturing, although it might also be argued that this is associated with the fear of being exposed in a public performance, or of hurting the patient, (ibid. p.288; Atkinson, 1997 pp.90-1; Conrad, 1988). In either case it serves to underline the point that acquisition of physical skills is seen as necessary if not sufficient to being (seen as) a doctor, and is also a significant indicator of competence (Harris, 2011).

These contributions indicate that the learning and performance of practical knowledge is embedded in action. Whereas according to Kuhn, scientists absorb the tacit knowledge essential to understanding the scientific community's 'way of going on' as Forrester expresses it through textbook exemplars that they can work through and then draw on to solve new problems, medical students have patients. Whereas scientific textbooks choose examples carefully, clinical placements rely on the proliferation of examples, what Foucault refers to as 'the endless play of modifications and repetitions', and compared with textbooks they collapse or compress the process of reasoning and action so that students are continually and publicly obliged to internalise medicine's way of going on (Foucault, 1994 p.110).

What Forrester refers to as the 'epistemic nailing down' of cases to the individual means that the disciplines of medicine and law have a different relationship to theory from science, in them 'Theory can always be demoted in a gesture towards the real, the empirical' (Forrester, 2007 p.810). In an echo of Schön, Forrester writes,

> *'The case-based disciplines reason analogically, creating complex networks of similarity and dissimilarity relations, often nested in heterogeneous hierarchies, with no guarantee of self-consistency or of the non-contradictory character of these overlapping categories. These truly are disciplines that work with shared examples'* (Forrester, 2007 p.812).

In the way that for Kuhn puzzles and textbook examples are not merely pedagogic means in the sciences but a key way of identifying the field of enquiry, working with patients lies at the heart of and defines education and practice in medicine (Forrester, 2007 p.818). Kuhn writing of the possession of a common language among groups says, 'in learning such a language, as they must to participate in their community's work, new members acquire a set of cognitive commitments that are not, in principle fully analysable within that language itself' (Kuhn, 1977 p.xix). Forrester notes that the Socratic method not only requires students to argue with one another but prompts teachers to be less didactic, and so serves to inculcate these cognitive commitments in rehearsed speech (see Chapter 10).

The language of consultation and presentation

In a medical education that aspires to be patient-centered the consultation between doctor and patient is the most critical stage. It is the beginning of a process where not just a case, but medical knowledge itself is revised and from which it may be reconstructed, so an effective consultation between doctor and patient is a necessary foundation for successful treatment. It is therefore not surprising that history-taking, and the skills that contribute to its success are central to the education of doctors, or that medical sociologists and others have been keen to analyse this interaction between doctors and patients, although Atkinson warned of the assumptions which derive from undue significance being attributed to the consultation on its own, i.e. perceiving medical work as solitary and largely confined to the site of consultation with the patient (Atkinson, 1995 p.34). His interest is in how medical knowledge is produced and reproduced, legitimated and shared within professional communities and it is in this context that he draws attention to the rhetorical skills which doctors use to incorporate disparate material such as test results, images and symptoms into what he calls ‘plausible and persuasive accounts’ (Atkinson, 1995 p.90). As with performances, repeated telling works up and refines cases, and Atkinson notes the dramaturgical and liturgical metaphors and the element of theatricality present in medicine (Atkinson, 1995 p.93).

Without doubt students' and doctors’ ability to present patients is crucial, and the impact of a good or indifferent presentation is immediate. It is here, often in the public arena of the ward or the surgery that the potential for student humiliation is greatest, especially if the presentation is perceived as covering irrelevant detail (Lempp and Seale, 2004). As Good notes there is an element of performance integral to this process and students treat presentations as such by rehearsing them. This makes it less surprising that social scientists and practitioners alike have drawn on terminology relating to religious ritual – ceremonial order, liturgy – when discussing medical discourse: the metaphor captures the combination of a written framework informing repeated verbal delivery (Strong, 2001; Atkinson, 1995) .Whatever the scientific content, it is evident that constructing a narrative and then telling a convincing story is crucial both in learning and in professional life. Good argues that these narrative forms have important consequences: they determine both thought and action and they ‘shape and reshape the body’ and Anspach proposes an even stronger version of the role of words (Good, 1994; Anspach, 1988). Basu and

Roberts focus on the underlying discourses which they say some see as ‘the most influential force in driving educational development, as opposed to the way in which such a system is organised’ (Basu, 2009 p.35). Chapter 10 draws on observations to explore these accounts, or what Foucault calls the ‘implicit labour of language’ in talking with patients on clinical placements in more detail.

The environment, the curriculum, tutors and patients

Most teaching environments are asymmetrical in the sense that as Bosk says tutors control the floor, and there is only exceptionally any third party observation, but clinical placement teaching is not normally sequestered in a classroom but takes place in a more or less public space, a ward, a clinic, or a surgery where the qualified doctor is on home territory, rather than in the comparatively neutral space of the seminar or lecture room (Bosk, 2003 p.95). Despite the emphasis on a planned curriculum and the associated inspection regimes, it remains more difficult to 'police', or indeed as already noted even to know, what goes on in clinical placement teaching than it is in other more 'purely' educational environments: it is this situation that prompted the reference to ‘rubber levers’ in the Introduction (School Conference September 2013). Add to this the fact that many (perhaps the majority) of tutors have been teaching postgraduate or undergraduate students for years and that not all of them find it easy to come to terms with the comparatively recent introduction of the GMC's outcomes-based approach and it's clear that the situation is developing. As Freidson suggested and student feedback continues to indicate, some clinicians may have and transmit unconventional, even eccentric attitudes and beliefs which students are in no position to challenge.

Returning to the notion of the hidden curriculum, it might be more useful to suggest that clinical placements are in transition from a situation where there was no explicit curriculum to one where it may be being delivered, or alternatively, modified, ignored, criticised or subverted by some of the tutors who are supposed to deliver it (Coles, 1998). Schön found that in the early stages of learning students may be able to present a problem but be unable to progress because they have framed it incorrectly; the supervisor’s job then is to reframe the problem, or properly help them to reframe it; indeed problem-based learning is a way of exploring this framing process. Tutors in deviant traditions should, Schön says, tailor their moves to the student. Such an

emphasis on student-centred learning ought to mean that ‘tailoring’ is more common throughout education, but adaptation of this sort may not always inform clinical tutors’ behaviour. Tailoring their activities to the student is part of building a relationship which is conducive to learning and the variety and uncertainty characteristic of practice, and the effects it can have on students’ sense of themselves and their values is why the nature of the relationship between tutor and student is critical. The significance of this relationship may be seen quite clearly in the arts when it is often possible literally to see or to hear where there has been a rather too direct transference between teacher and student such that students are (one hopes temporarily) rendered incapable of developing their own style. In the case of medicine, Bhandari’s accounts of postgraduate surgery students’ deference to their tutors’ approach to evidence-based practice also illustrates the degree of influence tutors can wield (Bhandari et al., 2003), (see above *Embedding evidence based practice*).

Coles suggests that much of the information in medical education is given in the teacher’s rather than the learner’s context not least because clinicians are used to solving the problems of others whereas education is, or at any rate should be concerned with helping students to identify their learning needs and to work to meet them (Coles, 1998 p.80). Dacre states that teaching in medical education is very variable, doctors may know their subject but most of them have not been taught how to teach and it is suggested, are likely to use the methods by which they were themselves taught; furthermore the hierarchy and a general lack of feedback means students tend to be less aware of their deficiencies (Dacre, 1998 p.189). Elton’s view of medical education is simply stated, for him it is probably saddled with a greater proportion of powerful and conservative teaching staff than average for all of higher education (Elton, 1998 p.203).

Generally the student's task in clinical placements is to speak to the patient to discover their symptoms, conduct an appropriate physical examination, deduce what may be causing the symptoms, and present their findings and conclusions to a doctor. Of course this is far from simple. For example whilst students are keen for tutors to observe and comment on the whole process, from the way they take a history onwards, some tutors (despite what the curriculum may say) are essentially interested in whether the student can make a differential diagnosis and they may interrogate students more or less robustly to ensure that they get that message across. Others particularly in the acute sector, may

be impatient with students' exploration of the background to patients' complaints, insisting that there is simply not enough time or in the hospital context, the need for such exploration, (see Chapter 10 *The significance of speech* and Chapter 8 *Time and timing*).

More fundamentally clinical placements may be workplace learning plus teaching, but it remains artificial. Medical students are now normally presented with a scenario in a rotation where they know whether the problem is musculoskeletal or respiratory for example and that there are answers even if they don't know what they are, because most tutors do not normally take them into a situation where they themselves are uncertain. Atkinson observed that when doctors did routine ward rounds with students in tow, they apologised and the usual question and answer was rather muted (Atkinson, 1997 p.106). If students do not attend out of hours what they mostly see, in the acute sector anyway, is what Atkinson terms 'cold' medicine; as he says therapeutic success can equal educational difficulty (Atkinson, 1997 p.156). A defined curriculum and structured sessions limit ambiguity and uncertainty to some extent because students know the aspect of the body they should be investigating, that there is a solution, and that their job is to find it. This situation is less uncertain than if they were faced with a patient who just comes in off the street in some distress with a variety of symptoms, (see chapter 10 *Hot medicine*).

It is necessary to remember that the first two years of a 5 year medical degree mostly take place in a conventional academic setting. Nowadays students have some exposure to the clinical environment during this first phase but the majority of the curriculum during those first two years is delivered in the university and takes the form of lectures, workshops, seminars, PBL sessions and other forms of learning and teaching. It is more straightforward for the university to control what students see and do within its own walls, so this first phase not only provides an opportunity to influence their styles of learning and understanding, as Fox noted, it also provides a model of predictable curriculum delivery and timetabling that clinical environments, particularly hospitals struggle to match (Fox, 1957). When students enter the final three years of clinical placements, their working life is likely to be less ordered.

It may now be easier to understand why the history of C20th medical schools was described as 'reform without change' and why Sinclair thought that he was not

conducting salvage anthropology. Whatever changes universities may have made to their curricula, the challenges of influencing what happened once their students went into clinical placements remained. From the third through their fifth year, students' learning experiences were probably variable, certainly when Atkinson did his fieldwork in Edinburgh in the early 1970s he specifically noted there was no curriculum for clinical placements (Atkinson, 1997 p.81).

Developments in the 21st century have undoubtedly led to change, and it could be that the traditional form of medical education is becoming a thing of the past in the UK. Equally it may be that older clinicians are unwilling to adjust their teaching while younger ones embrace the language and consequences of an outcomes based approach. In a situation where practitioners teach largely without benefit of much training it is likely that they would tend to call on their own experience in their approach to teaching. The new medical school which is the focus here has a curriculum that clinical tutors are expected to follow and its students provide information on whether they feel tutors are contributing to the achievements of the specified outcomes as well as on other aspects of their experience; furthermore their tutors benefit from this student feedback. In short, more is now known about what should happen in clinical placements although this is not necessarily a completely reliable guide to what actually does happen, than was the case in the twentieth century studies of medical education.

Discussion: understanding the learning environment

The sociological vocabulary of the gaze, the spontaneous virtues of description, uncertainty, and the peculiar amalgam of mind and body enacted in medicine pose some challenges to Cartesian dualism and prompt a search for concepts that are both analytically and empirically fruitful and can be recombined to capture how learning in medicine happens. As Bourdieu argues, everyday instruments of knowledge, assumptions and activities have to be interrogated to reveal the buried structures and the mechanisms of reproduction, but this chapter suggests that some of the concepts that have been drawn from sociology may obscure rather than elucidate how learning happens in the clinical environment.

The discussion shows how uncertainty or indeterminacy serve the cause of professional control, especially relevant in debates about the management of healthcare as well as the regulation of education. If practice could be reduced to or encoded in terms of what Jamous and Pelloille call technique, at least two consequences follow: firstly it is more susceptible to being broken down into auditable elements and secondly in principle it may make it simpler to teach and to assess. Tomorrow's Doctors' attempt to specify the skills and attitudes that must be mastered is predicated on the assumption that technique can be encoded and the slippage between the specification and outcome can be reduced (see Chapter 7 *Calibrating behaviour)*. Uncertainty may also be seen as a stimulus to both restraint and reflection, a creative force that can stimulate insight, intrinsic to medical practice, and students and doctors have to find ways of dealing with it. The sources indicate that it is helpful to see strategies for managing it, such as EBM, as embedded in different communities rather than as an individual response.

Indeed this chapter has underlined the significance of the social context in understanding how medicine is practised and learned, drawing on observations by Atkinson and Freidson to explore the collective and individual practices that construct it. It supports the notion that in medicine knowledge is legitimated by its perceived clinical utility at least as much as by its scientific credibility and it indicates how personal epistemologies born out of experience play a part in medical practice and medical education and so underlines the significance of the professional community, how hierarchy is implicated in learning and how it may influence the modes of reasoning in clinical placements.

It demonstrates that doctors' approach to knowledge often relies on personal experience and what Gabbay called 'mindlines', bodies of knowledge and ways of thinking that are created and modified through interaction with colleagues rather than any strict linear-rational modes of reasoning (Gabbay et al., 2004). It is not necessary to agree wholeheartedly with Freidson's portrait of the medical professional to recognise doctors' resistance to the reductive pressures that stem from scientific method on the one hand and managerial control on the other.

This thesis exploits the GMC's introduction of a framework for the curriculum and the system of rotations required to deliver it that changed the relationships between the school and the clinical environment and to some extent between clinical tutors and

students. Although this medical school was new it was operating in an environment and with staff who had enjoyed the same degree of autonomy in their teaching as in their clinical work and who reserved the right to ignore the curriculum, see Chapter 10 (Lempp and Seale, 2004). Although clinical placements have always presented a managed and mediated experience for students, they once allowed for more mystery at the bedside than does a curriculum organised around body systems. And whereas the expansion of placements into general practice affords more opportunities for students to 'see what comes through the door' than do hospitals, 'hot' medicine is normally conveyed through thought experiments or 'talk throughs' delivered by tutors that ask students to imagine situations with patients in A&E or an Acute Admission Unit (AAU), or through simulations, (see Chapter 10 '*Hot' medicine*).

The pre-clinical - clinical divide has been reduced by the introduction of clinical placements into the first two years of the curriculum and the thesis attempts to tease out the consequences of the shifts in the structures and relationships that resulted from this increase in students' exposure to the clinical environment, coupled with a curriculum organised around clinical relevance. In organisational terms the clinical environment remains less predictable than the university environment, the school's control over it is less assured and the difficulties that attend attempts to increase accountability in the system, the when, what, and how of curriculum delivery not only impinge on the student experience, they also leave traces that can assist in the understanding of how the reforms influence clinical placements. Arguably the increased weight given to the clinical perspective and its mode of delivery as a result of the reforms pose questions about the balance between the university and the clinic in the provision of undergraduate medical education that speak to both Schön's and Foucault's considerations of the relationship between them (Schon, 1987; Foucault, 1994), (see Chapter 11 *The clinic and the academy*).

Because clinical relevance is the touchstone for medical education, the time spent with doctors in clinical placements is valued highly by students, but the organisation of the curriculum by rotations has fragmented the system of supervision and requires more formal, i.e. written and more frequent appraisals of students by clinical tutors, and some of the consequences are reviewed in Chapter 7 *The assessment of professional attitudes and behaviour*. That discussion explores the design and operation of forms for the

judgement of attitudes and illustrates tutors' discomfort with the new system and the paradoxes that accompany mutual evaluation by students and staff.

Medical students continue to juggle the various modes of learning which Jolly and others used to distinguish different types of education. For example the distinction between the clinical and academic may be confronted early on in the course when students might conclude that hands-on experience is not as efficient as reading a textbook and that, as Becker puts it memorising takes less time than thinking, especially when it comes to learning material on which they expect to be assessed (Becker, 1977 p.114). And although it is a very unusual medical student who does not relish contact with patients, there is often a reluctance to spend time with them in relatively unstructured clinical environments where learning appears to be less focussed. Both preferences are driven by the incontrovertible fact that it is impossible for the students to learn everything and that, probably more than most undergraduates, medical students are driven by assessment; see the Appendix on assessment.

Any attempt to understand teaching and learning in the clinical environment not only requires an understanding of its context, but approaches capable of analysing the interaction between knowledge and experience, reframing and reflection, uncertainty, confidence and authenticity, seeing and saying, speaking and thinking. Appeals to overarching concepts such as the hidden curriculum or culture arguably blur the focus this requires, so in common with other recent examinations of medicine this thesis will concentrate on practice set within a learning community that considers how instruments and technologies, time and space as well as patients tutors and students combine to assemble the environment for practice in clinical placements (Prentice, 2013; Gabbay et al., 2004; Goodwin, 2009; Mesman, 2008; Frankenberg, 1992).

Whether the medicine is hot or cold, patients remain at the centre of the experience. They are the USP of medical education and they are both the end and the means of students' learning. Symptoms, such as murmurs, chest crackles, or clubbing of the fingers are experienced by students via the medium of particular people, and it would be surprising if, especially while they are relatively inexperienced and still learning, particular conditions were not associated in students' and doctors' minds with particular individuals. By the same token it would be a peculiar tutor who never used their own experience of

particular patients to illustrate points they were trying to make, and it is certainly how doctors' memoires are constructed (Marsh, 2014; Gawande, 2014; Groopman and Prichard, 2007). Indeed Sales and Schlaff contend that the idea that clinicians are trained as scientists is 'rhetoric' and that medical training 'has reverted to a model shaped predominantly by anecdote' (Whitehead, 2010 p.1667). Arguably then the ontological and epistemological individualism of which Freidson speaks may be partly rooted in the banal and obvious fact that the learning and teaching process in medical education 'hangs' knowledge on patients. This is not to say that scientific evidence is ignored, but simply to recognise that narrative and meaning are associated with individual patients and they play a significant role in medicine in general, and that in particular they can and do assist memory and learning.

The discussion of exemplars in case-based reasoning indicated how performance in clinical placements and in particular with patients, builds students' understanding of what it is to practise medicine in what Kuhn called the collective labour of a scientific community. It confronts the paradox of providing an account of the tacit knowledge that is acquired through speech, by concentrating on the ways in which cases carry rules and actions that impart the practical wisdom that constitute appropriate professional ways of thinking and behaving in a community of learning (Lave, 1991; Prentice, 2013). It offers an account that challenges mind-body dualism by emphasising how students can combine the mental and the physical to help them to interiorise what Bourdieu called the sense of the game. Students have to learn how the public performance of speech in clinical placements is modified not only by the descriptions often applied to it such as pace, tone, timbre, volume etc. but also through posture, form and context, parts of which Bourdieu called hexis. The case method of teaching, used in PBL and in the clinical environment implies what Forrester refers to as the 'unruly pedagogic tool' of the Socratic method which eschews didactic teaching, places more of the onus on students to find out for themselves and, as argued later in chapter 10 reinforces the authority structure of medicine.

The medical student's own position can seem ambiguous, and managing their interstitial status with and between staff and patients is not infrequently a source for concern to them. Good and Good say competence and caring employ different vocabularies and they can conflict with one another so achieving the balance between empathy and

effectiveness, and ‘acting professionally’, may best be learned in genuinely stressful circumstances and may imply a reconstruction of personal boundaries (Smith et al., 2005). The feel for media, language and repertoire noted by Schön applies as much to medical students as to the artists, designers or actors whose ‘deviant traditions’ focus explicitly on form. Students have to acquire the language of clinical practice which mixes the language of science with careful and relevant observation and quite possibly a judicious use of reported or actual experience. The relative significance of patients’ backgrounds, behaviour and symptoms and test results may vary not only with their condition, but also with the consultant treating them, or the resources available, so students have to learn to situate the accounts they give accordingly. These different modes of expression must be acquired and used appropriately by students if they are to qualify and practise, and these modes and practices structure how they learn to think.

Clinical placements provide an environment where language and modes of address, attitudes and behaviour can be observed and if appropriate, acquired. The modes of learning offered in medical education might at first sight seem to offer a kind of Kolbian nirvana in which a variety of learning situations are reinforced through practice, but Kolb’s model rather assumes a degree of consistency and perhaps explicitness running through these experiences for it to be effective. Enough has probably been said about uncertainty to blur such a clear picture, but it is also the case that learning experiences can be both contradictory and indescribable in terms of learning outcomes. Adjusting to what Good and Good see as the different vocabularies of competence and caring is not straightforward, but there are also interesting questions surrounding the learning of outward and visible signs of caring in order to demonstrate it, and whether the learned behaviour engenders or helps students to embody the commitment or vice versa.

Learning from practice is complex, often opaque, mixing cognitive and motor skills with emotion (Sointu, 2017). Skills learned and practised may not fall neatly into purely physical or intellectual categories, and the deployment of a clinical skill may engender reflection at the same time as being seen as a validation of a student’s status as a doctor-in-training. But as Wetherall says practice has well-established and familiar connotations in social science and is ‘capacious enough to extend some of the thinking about activity, flow, assembly and relationality’, it evokes forms of order but recognises that things could

be otherwise, it is about improvisation and training, discipline and control (Wetherell, 2012 pp.4,23).

5. Sources, methods and the metrological chain

> **'They maintain that the operation of counting modifies quantities and converts them from indefinite to definite sums' The arithmetic of Tlön as described in Tlön, Uqbar, Orbis Tertius in (Borges, 1980 p.37)**

Clinical placements cannot be understood in isolation, they are constructed and operate in systems of knowledge, regulation and management that include institutions such as science, the GMC, universities, medical schools and the NHS, each with its own goals, standards and regulatory framework. The thesis examines changes to the regulatory context, prompted partly by political pressures and what some refer to as the development of a neoliberal critique of the professions in the UK and elsewhere during the 1980's, and the development of the 'audit society' (Stacey, 1992; Power, 1997). It also analyses how the regulatory framework impinged on the construction and operation of a new medical school. The discussion in chapter 4 examined some approaches to learning in the clinical environment and this one offers a map of the frameworks, institutions and processes relevant to undergraduate medical education to trace the associations between them.

It draws together the sources and methods used to analyse the relationships between the global and the local. Although inevitably the two-dimensional representation in figure 1 implies a kind of Cartesian dualism where science is seen as 'above' learning practices, as it proceeds along and 'down' the metrological chain this chapter continues to support the argument that aspects of learning medicine are best understood as embodied practices, a combination of thought, memory, repetition and various kinds of experience, audible, tactile or mediated by technology that are combined with the intellect. As the analysis proceeds along the metrological chain the thesis moves from historiography to ethnography, the use of written sources diminishes and observation is used to understand how *Tomorrow's Doctors'* recommendations have been modified in their journey between the GMC and the learning environment through the university and the NHS.

Metrology and standards

The chapter proposes that the standards that allow the comparison and commensurability which Latour sees as central to much of human life and that he calls metrology, is fundamental to science and will also be useful in the discussion of the assessment and evaluation of (and indeed by) students, in the history of the regulation of undergraduate medical education, and the notion of the metrological chain for the organisation of the thesis itself (Latour, 2005 p.233). Latour describes metrology as 'the scientific organisation of stable measurement and standards', and 'the work of constructing the infrastructure without which a 'fact' or 'technology' would not travel vary far' (Timmermans and Berg, 1997 p.296; Latour, 1985 p.270). Latour notes that the social sciences themselves are part of standardisation and metrology, a contention that the work of Savage and Rose would support, and claims that 'Before science studies and especially ANT, standardisation and metrology were sort of dusty, overlooked, specialised, narrow little fields.' (Savage, 2010 p.91; Latour, 2005 p.91; Rose, 1990). Latour identifies what he believes ANT can contribute:

> *'Our distinctive touch is simply to highlight the stabilising mechanisms so that the premature transformation of matters of concern into matters of fact is counteracted. ANT argues that it should be possible to clarify this confusion, to distinguish between the two tasks of deployment and unification, to spell out the procedures for due process, thus modifying what it means for a social science to be more politically relevant and more scientific.'* (Latour, 2005 p.261).

For Latour it is ANT's bridging of the gap between the local and the global that allows a view of how standards are agreed, by tracing the metrological chains 'whose material network can be fully described' (Latour, 2005 p.229). This study travels along these metrological chains, using the material network to proceed from the national to the local, as stages along a route to understanding the operation of clinical placements.

More generally, Latour proposes that society itself should be seen not as an entity in which everything is embedded, but as something which flows through everything, society he says, may be seen as 'calibrating connections and offering every entity it reaches some possibility of commensurability' (Latour, 2005 p.241). But calibration is not

ubiquitous, ‘The world is not a solid continent of facts sprinkled by a few lakes of uncertainties, but a vast ocean of uncertainties speckled by a few islands of calibrated and stabilised forms’ (Latour, 2005 p.245). Whether or not one accepts Latour’s argument for the fundamental importance of calibration, comparison and commensurability to our sense of our own humanity, the encoding or inscription of a curriculum in terms of outcomes and objectives certainly depends on measurement and assessment, from the GMC’s surveillance of medical schools to the mechanisms for establishing validity and reliability in the assessment of students (Mc Naughton N and V, 2012). As Latour says without metrology no measurement is stable enough to allow the ‘homogeneity of inscriptions’, but as his metaphor of islands implies, some parts of medical education will be more encoded and calibrated than others (Latour, 1985 p.27). So it is necessary to consider, if not the whole ocean, then the shallows of uncertainty in any enquiry into the significance of the ostensibly un-encoded or what some have described as ‘hidden’ aspects of the curriculum: to ask how the forms or the rituals of calibration such as assessment themselves carry meaning, (see Chapter 4 *The hidden curriculum*), (Rose, 1990).

Indeed standardised tests and evidence-based medicine are two of the examples picked out by Timmermans and Epstein as typical of standardisation, and they go on to ask about the accountability of standard-makers, the role of science in regulation, and how standardisation works in ‘domains marked by individualism and localism’ each of which is relevant to tracing medical education’s metrological chains (Timmermans, 2010 p.70). Their definition of standardisation echoes Latour’s, following Starr and Bowker they define it as ‘a process of constructing uniformities across time and space, through the generation of agreed-upon rules’ (ibid. p.7; Starr, 2008). They also put their own gloss on Latour’s metaphor of ‘black boxing’, writing that ‘Once standards are established, they render invisible the work required to make them possible and the uncertainty and ad hoc tinkering that accompanied standard implementation’ (Timmermans, 2010 p.83).

This analysis deals with the establishment of the regulation of undergraduate medical education in the late twentieth and early twenty-first centuries in the hope that it will make visible how ‘Through a close empirical focus on outcomes, sociologists can [also] follow the path of the collateral damage that standardisation may cause for those who defy standardisation, as well as trace the ironies of unintended consequences’ (Timmermans,

2010 p.84). It will also show how standards themselves come to be modified in their journeys along metrological chains and across institutional boundaries.

Time and texts

The discussion will draw on primary documents that have been interrogated not only for what they say, but for how they are used by actors and how they influence behaviour, behaviour which may depart from the script that the documents themselves ostensibly prescribe. Apart from *Tomorrow's Doctors*, GMC reports, course regulations, handbooks and records of achievement are significant means by which standardisation, regulation, translation and management find expression and are understood. Central to the argument is the recognition that documents act as 'mediators', not just carrying meaning but frequently inflecting it (Timmermans, 2010 p.84; Latour, 2005).

The focus is on the two decades from 1990 to 2010 when the GMC's recommendations for undergraduate medical education laid out in *Tomorrow's Doctors* in 1993 were developed. Fortunately Stacey who was a member of the General Medical Council between 1976 and 1984 provides a sociologically informed account of the GMC in the 1970's that deals with the legislative background and provides a useful analysis of the Council's ideas about medical education at that time (Stacey, 1992). Sources for the period between 1993 and the turn of the century are more difficult to find, but thereafter the establishment of four new medical schools in the UK among other things, prompted the GMC to pay more attention to its responsibilities for the quality of undergraduate medical education, one result of which was two further editions of *Tomorrow's Doctors* in 2003 and 2009, each of which is a primary source for this thesis. The first 1993 edition also prompted an influential reflection by the Scottish Deans' Medical Curriculum Group on some central preoccupations and concepts, and their publication *The Scottish Doctor* (2000) informed the bid for the new medical school examined here, is acknowledged in its handbooks, and featured in the school's exchanges with its GMC visitors between 2003 and 2008 (Group, 2000). The successive editions of *Tomorrow's Doctors* explicitly reflect visiting teams' experiences of applying its standards in medical schools and they map the Council's shifts in standards which at times reflect the realities of the surveillance process, and at others pressures from events in the wider world of medicine, (see Chapter 6).

Fig. 1 locates the frameworks and institutions and the sources and methods that have been used along the metrological chain, and also provides a guide to the order of the thesis which moves from an examination of the legal framework for the regulation of medical education to the details of practice in clinical placements.

Figure 1 The metrological chain

	Global →		***National***		***Local***		***Sources and methods***
^^^^^^^ Upstream		***Metrology***	***Framework***	***Institutions***	***Regulation***	***Learning***	
	Laws and Frameworks	Science			Law		Pre-1993 Written
		Scientific method		Professions	Medical Act		
		Biomedicine		Clinical Medicine			
	Institutions			GMC			
				Universities	GMC QA	NHS clinical environment	1993-2009 Written. Retrospective participant observation
	Standards			Regulations	*Tomorrow's Doctors*		
Curriculum							
vvvvvvv Downstream	***Standardisation processes***			University QA	GMC visits		
	Standardisation concepts			*Goals*			
	Learning			*Outcomes*			
				Learning practices	*Learning means*		
	Practices and means			Embodiment Reflection Tacit knowledge Emotion Articulation	Rotations Assessment Teaching Resources Patients		2003-14 Spoken and written. Observation Retrospective participant observation

Laws and frameworks

It was the 1978 Medical Act that defined the GMC's responsibility for coordinating all stages of medical education, and with it the power to make the recommendation to the Privy Council enabling graduates from an approved medical school to be awarded a UK primary medical qualification. Although the law is only occasionally invoked in the GMC's day to day work in medical schools, the Council's power over doctors' right to practice alongside its powers to recognise undergraduate education is significant, not least because of its relevance to clinicians' autonomy. Stacey argues that the GMC's statutory position means that it is part of the central state apparatus, so its members are part of the governing elite, complicit in what Timmermans and Epstein refer to as 'neo-liberal rule at a distance' (Timmermans, 2010 p.80; Stacey, 1992 p.13). As Stacey notes, the GMC's legal status also sets it apart from other medical bodies with an interest in medical education such as the BMA or the Royal Colleges (Stacey, 1992 p.14).

Science and scientific method provide procedures, standards and ways of thinking about the world that run through discussions about medicine and medical education, calibrating connections and defining commensurability there in the same way as Latour sees society doing more generally. Perceptions of scientific method and validity permeate much of the literature relating to medical education and frame discussions of the curriculum even though clinical judgement is informed by other than purely scientific considerations, and references to the art or craft of medicine are common and significant (Carmel, 2013; Bosk, 2003; Montgomery, 2006; Foucault, 1994).

The law and science furnish frameworks that define their fields and indeed impinge on others', and they support and legitimise ways of thinking and acting that go beyond substantive knowledge of a subject or area. This thesis explores the frameworks that doctors use, and so examines not simply how undergraduate medical students' practices are defined by medicine with all its uncertainties, but by *how* it is learned. This is predicated on the assumption that the nature of the modern undergraduate curriculum is traceable; upstream to political, legal and regulatory considerations and downstream through rotations and assessment practices (see Figure 1), and the argument is that a good deal is to be learned from uncovering how the frameworks shift, intersect or associate to impinge on practice in clinical placements..

From frameworks to inscription

Invoking frameworks in this way might suggest an overly idealist interpretation but this is avoided by moving along the metrological chain from the national to the local to analyse specific practices and concepts that are used in and result from a variety of documents. Standards have to be expressed and operationalized so their content and organisation and the networks through which they are administered will be explored to show how the experience of regulation leads to their adjustment, (see Chapter 6 *The turn to standards*, and Chapter 7 *Calibrating behaviour*).

Another objection to this approach might be that a concentration on documents and organisation unduly disregards human agency; a complete account of regulation might be expected to investigate the regulatory institutions and their personnel - the visiting panels, the administrators, the academic and other staff involved. But a twenty year span decreases the potential reliability of participants' accounts, so the pragmatic methodological choice is to employ what will be called 'retrospective participant observation', defined as the author's recollection as a participant, supported by available documents, to cover the years between 2003 and 2011, buttressed by the documents and available commentaries for the period between 1993 and 2003. Close attention will be paid to the documents, concepts and practices downstream of *Tomorrow's Doctors* towards the curriculum itself and its implementation, (see Chapter 7).

The analysis draws on methods that have been developed and deployed in studies of science and technology and it will often concentrate on processes and practices, favouring Savage's 'non-humanist ontology' (Savage, 2009 p.164). When Rose shows how systems of truth about the self are established, the apparatus of truth and the procedures through which it is realised, he draws attention to the 'processes of 'inscription' which translate the world into material traces' that can be used in administrative decisions (Rose, 1990 pp.4-5). He proposes that

> *'The history of the self should be written at this 'technological' level, in terms of the techniques and evaluations for developing, evaluating, perfecting, managing the self, the ways it is rendered into words, made visible, inspected, judged and reformed.'* (Rose, 1990 p.218)

This thesis is concerned with the techniques used to manage the curriculum, the context in which they are implemented and how they influence the frameworks that classify and prioritise processes, methods and knowledge. As Latour has stressed, documents and inscription devices' importance derives from their effects on action and practice, and it is the unintended ways in which they 'act', often due to their modes of implementation, which are a significant focus for this research.

The examination of how documents co-construct action cannot ignore what the texts say because they are part of Rose's material traces, so for example the changes to successive editions of *Tomorrow's Doctors* are critical to a proper understanding and interpretation of the changes in the regulatory environment. But the analysis needs to move beyond exegesis and linguistic analysis and notions of discourse if it is to operate at the technological level suggested by Rose (Mc Naughton N and V, 2012). This shift is facilitated by deploying the concepts of 'inscription' and 'scripts' used by Rose and Latour, and developed in studies of science technology and indeed medicine (Mesman, 2008; Berg, 1997).

In a typically radical move Latour proposes that 'most of what we call 'abstraction' is the belief that a written inscription must be believed more than any contrary indication from the senses' (Latour, 1985 p.23). He uses the metaphor of a cascade to describe the way in which events are transferred into measurements and statistics and he notes the tendency to merge data that is facilitated by a process of its homogenisation through binary units and by computers (Latour, 1985 p.16). He writes

> *'Most of the 'domain' of cognitive psychology and epistemology does not exist but is related to this strange anthropological puzzle: a training (often in schools) to manipulate written inscriptions, to array them in cascades and to believe the last one in the series more than any evidence to the contrary. It is in the description of this training that the anthropology of geometry and mathematics should be decisive''* (Latour, 1985 p.24).

Understanding how these scales are constructed can provide an insight into the practical ways in which power is achieved and can be applied throughout the metrological chain from the consideration of the terms in which standards are expressed to the means by which students are assessed (Latour, 1985 p.27).

In the regulatory context, inscription conveys the idea of approved action that allows some discretion on the part of actors, so it provides a way of embedding the recognition sometimes credited to ANT that non-human entities, be they spiritual or material, have an effect on human actors, and it is fruitful to apply it to the texts used here (Latour, 2005). Inscription draws attention to the perhaps rather obvious but sometimes ignored fact that scripts are written by somebody in a particular social context and that they are generally 'acted out' – ANT might say 'performed' – in another context, i.e. they are translated. Most of these scripts do not merely transfer information but especially because they are concerned with regulation in one way or another, they are prescriptive and they depend on concepts and assumptions, technologies or algorithms for their implementation. Notably while they are in development, before they are black boxed and become intermediaries, interested parties are more likely to question their conceptual, technical or operational foundations and to choose to ignore them or seek to change them (Waring et al., 2016). Consequently the successful development of standards frequently depends on a degree of flexibility and indeed compromise through finding concepts that can bridge the institutional boundaries that scripts have to cross, in this case between the GMC, universities and the health service (Berg, 2004). Here this entails an examination of the GMC's modifications to the concepts used in successive editions of *Tomorrow's Doctors'* and the procedures it uses to deal with the experience of boundary-spanning required by regulation (see Chapter 6).

Therefore much depends on the conceptual and technical repertoires on which these documents draw, not least their legitimacy in the eyes of actors embedded in their respective environments. Although the acceptance of standards also depends on the credibility of the institution that set them and the means by which they are implemented or enforced, it hinges perhaps most fundamentally on what we might call the currency of their conceptual foundations which cannot be divorced from the metrics they employ. Assumptions derived from what Stacey has called the mode of learning in clinical placement (roughly speaking a notion of apprenticeship) have tended in practice to override and nullify the conceptual shift represented by the use of goals and outcomes in the medical education curriculum (Stacey, 1992). Some clinicians' responses are still entrenched in the framework of that mode and as Chapter 7 argues, their attitudes and practices contributed to the creation and operation of reductive measures of assessment, (see *Tracking professional attitudes and behaviour through portfolios*). It may be, as

Rose, Savage, and others have argued that the social sciences and their methods have been incorporated into our understanding contemporary life, but it is still the case that in many areas, and medicine and by extension medical education is one, concepts such as attitudes or capabilities tend to be understood and assessed in rather behaviourist terms (Donetto, 2012; Savage, 2010; Rose, 1990). The search for indices to cope with the uncertainties inherent in the judgement of capability (Latour's cascade) can give rise to methods that pay scant attention to the validity of the connection between observed skills or behaviour and the competences they are supposed to measure, and too much to the statistical validity of the measures themselves, with the result that subtle judgements are reduced to relatively crude scales in the interests of moving information from place to place (Hodges and Lingard, 2012).

It is too simplistic to claim that clinicians seek the security of clear indicators in their work, be it clinical or educational because they are influenced by the culture or frameworks that stem from natural science and its methods. It is more fruitful and convincing to recognise that central to both is the need for information transfer, and that in principle transferability is perceived to be facilitated by the clarity and simplicity afforded by the cascade. It then becomes possible to bring into focus the networks of documents, people, machines and institutions through which information has to pass and examine how it is encoded or inscribed in order to negotiate those different networks and how the networks in turn impact on information as it travels through them (Prior, 2008), (and see Chapter 7 *Calibrating behaviour*).

Looking across from clinical work to educational work it is possible to see that just like the medical record, the student record is, as Berg describes it a 'structured *distributing and collecting device'* (emphasis in original) (Berg, 1996 p.510). He shows how the patient record not only shapes the patient's trajectory but also the encounter between the patient and doctor and the hierarchical relations in the healthcare environment as well as what he refers to as the socialisation of interns (Berg, 1996 p.501). He like Foucault, warns of the dangers of characterising healthcare tasks as purely intellectual, arguing they are often highly embodied and that their surroundings play a core role, and he refers to Latour's observations about thinking with eyes and hands (Berg, 1996 p.504; Latour, 1985; Foucault, 1994). Berg shows how summaries transform information in such

a way as to be manageable for the working routines of the hospital, and raises questions about reading, writing and the depictions that result from forms.

Berg's work draws attention to the ways in which inscription devices not only use but circumscribe the skills of their users as well as the actors to whom they are applied – in this case both patients and students. These devices form part of the infrastructure that allows 'facts' as Latour calls them to travel, but they are neither neutral nor are they divorced from their environment. It is in one sense coincidental that Berg's work comes from the healthcare environment because it is his exploration of the nature of the tasks and the technologies, forms or inscription devices that is most pertinent here. Berg's work provides another example that shows where, despite the trouble taken to create seamless intermediaries through which information can flow unimpeded, one or more of them can affect the information they were designed to carry i.e. they remain mediators.

These considerations locate the curriculum in its institutional and regulatory context and facilitate an exploration of concepts and levels of analysis useful for the examination of learning in clinical placements through the available documentation. The operation of standards in general and the concepts of the metrological chain and inscription in particular, identify levels of analysis that could contribute to a description that meets Latour's two criteria of a) needing no further explanation and b) of standing a chance of making a difference to the way things are done (Latour, 2005 pp.137,154). Overarching frameworks such as law and scientific method are significant but the means by which they are applied is important too, and the argument is that tracing operational detail and practice can better illuminate the effects of the standards and scientific method than appeals to a notion of professional culture for example. It avoids the dangers of idealism and the use of unobservable theoretical constructs for as Goody argues, 'to call vaguely upon culture is the antithesis of analysis', and Latour observes 'culture does not act surreptitiously behind the actor's back' (Goody, 2000 .p 135; Latour, 2005 p.175).

Hitherto the focus has been on elements described in Fig. 1 as upstream of the curriculum, but the approach is designed to be applied downstream as well, deploying concepts that are useful at all levels of the metrological chain: succeeding chapters will apply these concepts to each of the 'learning means' that appear downstream in Fig 1. As already indicated analysis will start in Chapter 6 with the content of relevant

documents and continue in Chapter 7 by exploring their implementation and their intended and unintended consequences through accounts of their journey along the metrological chain and across institutional borders. Over two decades there have been significant conceptual and institutional shifts in the GMC's approach to regulation and to medical education as a whole, so the comparison in Chapter 6 between successive editions of *Tomorrow's Doctors* is critical to understanding the move from what might be called a currency of goals to one of outcomes.

From inscription to practice and back: articulation

Moving downstream away from regulatory texts along the metrological chain reveals practices of evaluation, teaching, learning and assessment that are shaped by documents but as already stated, not determined by them. Scripts can only facilitate or encourage performance. Here analysis must focus on the point of practice in the clinical environment to understand the components of learning to practise medicine, and for this it recruits notions of embodiment, emotion, reflection, authenticity and tacit knowledge capable of reinstating agency to a non-humanist ontology. The argument is that medical students are learning in a unique environment where their goal is to achieve a synthesis between understanding, speaking and explaining that combines motor, emotional and intellectual skills, and a notion of embodiment can assist an understanding of how their practice is forged from these different elements.

Latour conceives of the body as an interface that becomes more and more describable 'as it learns to be affected by more and more elements' (Latour, 2004 p.206). He uses the example of training perfumiers to become 'noses' through a combination of teaching and using a specially designed box. He recruits the notion of articulation to cover their ability to distinguish scents, inarticulacy being the stage when different odours elicit the same behaviour, whilst an articulate subject is one who has learned to be affected by previously indistinguishable external stimuli. He argues that if we approach articulated propositions in this way it is possible to conceive of the progressive composition of a common world (Latour, 2004 p.212).

For Latour and following him Prentice (see below), this is tied to broader considerations, one being the difficulties of statements about the world in general, and another the

significance of the question of the body, the present conceptions of which Latour attributes to:

> *'on the one hand, the meeting of feminism, science studies and a fair amount of Foucault's re-description of subjection, and on the other, the expansion of bio-industry into all the details of our daily existence'*. (Latour, 2004 p.227)

As already noted, following Foucault and in common with others, Latour sees the struggle around biopower, and what Rose refers to as 'the new figure of the human', as the great question of this century because it determines who defines what he calls primary qualities (Rose, 2013 p. 3). If biopower is allowed to define the qualities or essence of the body then it is likely that any opposition to it will be limited to the realm of the subjective, so it is important to find ways of speaking about and analysing the body to counter what he calls its imperialism, to provide bio-counter-power (Latour, 2004 p.227).

Space precludes an exhaustive pursuit of what may be acknowledged as a historically significant question that has implications for the future of biology and sociology, the task here is to try to unpack learning processes that call on a variety of sensory inputs, and that entails some consideration of sociological and anthropological approaches to embodied learning (Meloni et al., 2016). This discussion touches on questions about the extent to which a sociological bias towards unification and abstraction impedes an understanding of discontinuity and complexity as well as the degree to which other disciplines, some of them allied to biology, may be harnessed for our understanding of the 'material dimensions of learning processes' (Downey, 2010 p. S34-5). These considerations seem to become more pressing as learning shifts from the use of conceptual to mimetic means, but consideration of the latter can illuminate our approach to embodied learning further 'up', or more neutrally along, that continuum.

The invocation of such a continuum where the intellect is perceived as 'higher' than action, reflects a Cartesian dualism that is peculiarly inappropriate in the study of medical practice. Prentice argues that the mind-body split is reflected in cognitive approaches to learning which ignore the different kinds of perception, technique and emotion that are central to the practise and learning of medicine and she says it creates a 'philosophical aporia, a gap between representation and reality that is impossible to bridge.' (Prentice,

2013 p.19). Ingold notes that the privileging of vision and hearing over touch to which Prentice also refers has an even longer tradition dating back to Plato and Aristotle (Ingold, 2004 p.330). They agree that the discussion of embodied learning has to find a way of understanding not just the development of intellectual and perceptual skills but how they inform one another, and here how medical students are inducted into such a wide range of interactive skills.

Habitus, embodiment and practice

It has been noted that Bourdieu appears not to allow actors sufficient autonomy to reflect on their own lives because the notion of habitus makes the reproduction of the external environment overly significant in his account of action (Shilling, 2008 p.2). Gross argues that despite his attempts at disavowal, system reproduction 'haunts' Bourdieu's work with the result that action seems to be reproducing or merely echoing already existing structures (Gross, 2010 p.344). Downey thinks an overarching concept such as the habitus tends to lead researchers away from a close examination of corporeality (Downey, 2010 p.S24). His interest is mimetic learning where skills don't simply embody knowledge but also physical, neurological and behavioural changes that allow the subject to do things she couldn't do before, and he argues it is necessary to ground that learning psychologically and biologically. Echoing Goody and Latour's warnings about culture he questions the utility of what he calls a 'unifying treatment' of which habitus is an example, in the analysis of unconscious dispositions, skills and perceptual abilities arguing that it reduces observed complexity and discontinuity (Downey, 2010 p.S24). He affirms

> *'The notion of a unified structuring structure is elegantly modernist and functional; the human brain and body, however, are baroque, cobbled together by evolution, biological processes, and individual development'* (Downey, 2010 p.S33).

Learning a skill is not he believes best conceived of as a process of internalisation of some shared sense of what he refers to as a 'reified cultural structure' so he suggests connections between bodily and mental attributes be explored in more detail, examining the transformation of the novice through changes in muscles and motor skills, attention,

emotion and interaction patterns, and the techniques of self-management involved in them (Downey, 2010 p.S36).

This sociological exploration of embodied learning in medicine will be concerned with the *combination* of motor, perceptual, intellectual and linguistic skills, particularly how they are brought together, but the biological or neurological paths to which Downey refers will not be explored. One of the central concerns of undergraduate medical education is how students use their own minds and bodies in conjunction with those of their patients to understand medicine, so the thesis will explore the significance of motor skills to students' perceptions of their clinical competence, partly, but not only because they are visible and can have such direct effects on patients and thereby tap into emotions in an immediate, almost visceral way (Wetherell, 2012; Måseide, 2011; Harris, 2011). However the methods used for this research preclude Downey's detailed consideration of students' use of their own bodies to practice skills such as percussion, which is not to deny that 'the dissolution of the perceiver and perceived' might yield useful insights into students' learning of clinical skills (Harris et al., 2015 p.19).

This thesis is concerned with how practices and processes contribute to framing and influencing action, and whilst acknowledging path dependency in various aspects of medical education, in particular the notion of apprenticeship, it also has to address the considerable variety of behaviours and epistemologies to be found in medical practice. So if it is to provide a satisfactory account of the development and reproduction of this diversity it needs a more nuanced theory of practice than Bourdieu's notion of habitus appears to provide

Prentice's discussion of surgical training addresses what she terms the 'epistemic anxiety' that doctors feel when technologies and treatment regimes lead them away from the 'real' body and she thinks that the growth in the use of aggregated and abstracted information about patients and their bodies will create 'significant tension' in biomedicine (Prentice, 2013 p.100). Writing about what she terms the 'decontextualising' of practice which renders it partial and removed from patients Prentice refers to Thompson's notion of 'ontological choreography': the creation of distance through objectification that alternates with ownership through appeals to personhood (Prentice, 2013 p.38). The argument is that medical training teaches the trainee to objectify the body or alternatively,

as she puts it to ‘activate the person’ depending on the circumstances (Prentice, 2013 p.38). Her observations bear on the discussion about inscription as well as drawing attention to the tension at the level of individual students between what Latour might call bytes of information from the intellect, from touch etc. and how they learn to bring them together to achieve and maintain a holistic view of patients and their bodies (Latour, 2005). This ‘footwork’ may contribute to an understanding and consideration of the I:T distinction elaborated by Jamous and Peloille and how doctors juggle notions of craft and science (See Chapter 4 *The professional context for teaching*), (Jackson, 1970 pp. 111-52). Prentice argues that:

> *'By attending to bodily aspects of residency education, the accumulation of small daily actions a resident makes become connected to the development of higher level abilities such as judgement. By examining how medical knowing becomes embodied through practice in the hospital, the cultural and emotional aspects of clinical learning become more clearly related to technical and formal knowledge. Judgement and compassion become emergent properties of accumulated information, skill, practice, and experience, including emotional experience.'* (Prentice, 2013 p.135).

She argues that a range of structures, from hierarchies and humiliation to dress and ‘comportment’ contribute to students’ embodiment of the practices of medicine and in a particularly interesting observation, says that much of what has been called the ‘hidden curriculum’ is in fact referring to the adoption of bodily techniques (Prentice, 2013 p.110).

Prentice agrees with Latour that the language of representation leads to unanswerable metaphysical questions and draws on his notion of articulation to find a way of avoiding questions about what a subject knows in order to focus on what a subject does (Prentice, 2013 p.228). Given that a good deal of medical education entails articulating the patient’s body and the doctor’s body, she proposes a notion of mutual articulation to explore the interaction between knowledge and experience of anatomy texts, models and surgical practice (Prentice, 2013 p.229). The idea of mutual articulation could contribute to an understanding of the ways in which students encounter a patient say, ostensibly as an instance of a particular condition that is described in the texts but one who may also come to represent the rather messier realities of the condition’s effects on patients’ own

lives and that of their families. The patient provides the student with an example, perhaps later retrieved as an aide memoire, embedded in the student's experience through her senses and emotions which may inform that student's perception of the condition, but at the same time contribute to an appreciation of the difference between texts, models (Foucault's atlases) and the student's experience of the patient as well as the patient's experience (Forrester, 1996). Here understanding and memory can draw on triggers such as smell and touch that are often more evocative than more 'distanced' senses such as sight or indeed speech, but it is their combination which renders the clinical experience uniquely embodied and powerful. Chapters 9 and 10 explore how students' learn to gather, reconfigure and recount information from patients, and the part played by syntactical and bodily forms in the learning process.

The habitus is an attempt at abstraction and unification which might, as Downey suggests pull analysis away from a detailed examination of corporeality, but this can be countered through a limited use of the concept of embodiment to foreground the deployment of touch, hearing, sight and smell that are combined with speech and reasoning in the learning and performance of medical practice in the clinical environment, making no 'a priori' assumptions about the primacy of the senses, expression or cognition. A sociological account must avoid decontextualizing practice and so focus on the networks of relations that are independent of individuals' consciousness and will, but just as with inscription, it is necessary to allow actors a little more agency than the Bourdieusian idea of determinations implies. The notion of practice encompasses forms of order whilst recognising their 'could be otherwise' qualities (Wetherell, 2012 quoting Edwards p.4).

Observing that Bourdieu's investigation of the mode of production of practical mastery was a point of departure for Lave's work in *Cognition in Practice,* Venn and Bowker observe 'To study practice is to study a lived-in world', and it requires what they call an 'ethnographic seeing' that imposes no normative reifications and repudiates internalist methodological commitments; then practice becomes an 'already-there', created by the subjects of practice (Vann and Bowker, 2001 p.253). Learning is best seen as a creative process, separated from internalisation and set in a social context (Vann and Bowker, 2001 p.252).

The ethnographic seeing of practice encompasses the consideration of observable behaviour that can reveal for example such things as teaching through humiliation and where students stand (their place in both senses) on the ward, as more or less subtle instruments of domination that are unequivocally also part of embodied learning. Thus understood practice opens up a perspective for observation that allows consideration of the role of facial expressions and sight lines and the rhythms and repetitions of speech in memorising, assembling and reassembling the processes of clinical reasoning.

Clinical practice, observation and formal knowledge

Because medicine is apt to present itself in terms of a dualism, as a science and as an art, and so Carmel recruits the concept of craft to capture the combination of knowledge and practical action found in medical work (Carmel, 2013 p.731). He is concerned that STS approaches paint a picture of heterogeneity and multiplicity and suggests that their emphasis on difference lacks empirical warrant: he wants to 'eschew unnecessary theoretical divisions' (Carmel, 2013 p.732). Carmel asserts that human beings are concerned with coherence and thinks that embodiment and materiality are necessary to capture the subtlety of clinical skills. He observes that in intensive care information is often required immediately ('at their fingertips'), notes that the phrase 'clinically I think' is a way of disregarding evidence, and agrees with Mesman that touch is often more valued than data. Using careful phrasing he concludes

> *'On the one hand formal scientific knowledge was only infrequently observed to feature in the routine work of ICU practitioners; on the other hand, practitioners' interpretive work was applied to a diverse array of different kinds of knowledge'* (Carmel, 2013 p.742)

Carmel observes that ethnographic method is as he writes, 'commensurate with a focus on observable embodied practices' i.e. that formal knowledge is difficult to observe, raising questions about the influence of method on findings and perspectives (Carmel, 2013 p.743). He suggests that the idea that doctors increasingly rely on formal knowledge may be an artefact of the use of interviews which, as he puts it 'being in the realm of discourse' tend to relate to theoretical knowledge (Carmel, 2013 p.743). This observation relates to Knorr-Cetina's account of methodological interactionism which

sees interaction as a more adequate form of explication and 'the one from which the contextual and temporal features of action arise' (Knorr-Cetina, 1981 pp.19-20). In an echo of Bourdieu she claims this approach helps us to turn the obvious into the problematic; it allows the situation to speak by conserving meaning and allowing data to be presented in such a way as to as she argues, 'remain faithful to the field of observation' (Knorr-Cetina, 1981 p.26).

Source and discourse

Carmel's distinction between observation and the 'realm of discourse' prompts further consideration of the sources that are available for research as well as the methods, in particular the effects of written and spoken discourse. The concept of inscription assists a focus not just on the written or symbolic artefact itself, but on how it came to be written or made, its purposes and its consequences; similarly spoken discourse observed in a particular context can shed a different light on the mechanisms of embodied learning. Independent of content, pitch, tone and volume vary not just with context but can reflect insecurity, confidence, authority, curiosity and a number of other pointers to embodied learning, including the extent to which tacit knowledge has 'taken over': this is not to say that inscription cannot also provide indicators – for example new doctors' reliance on tests is generally taken to be due to insecurity in making a diagnosis, (and see *Laws and frameworks* above in this chapter). This points to the conclusion that the observation of behaviour is necessary for a proper exploration of embodied learning but that it may not always be sufficient, and it can be usefully supported by or triangulated with other methods. Medical students and the doctors they become have to juggle interactions, various sensory inputs, experience and knowledge, and the fluidity and elegance of the budding clinician's synthesis manifested in the performance and integration of these different skills provides a measure of the acquisition of interpersonal skills and tacit knowledge which when deployed properly combine to produce her authority.

Latour's idea of articulation refers to the development of skills of recognition and categorisation and medical students can, like the pupils Latour describes 'be defined as *bodies learning to be affected by hitherto unregistrable difference through the mediation of an artificially created set-up'* (author's emphasis) (Latour, 2004 p.206). It is this learning to be affected by external differences indiscernible to the neophyte and the lay

person that is fundamental to this notion of articulation. It is cumulative in the sense that as students or doctors add contrasts they are able to discern more differences, the process that Foucault saw as central to the clinic, and this yields another way of understanding the process of diagnosis and learning to set alongside the notion of reframing (Schon, 1987). So this conception of articulation allows a degree of distance from the details of linguistic expression, and draws attention to the cumulative and reciprocal nature of understanding and practical activity that characterises learning in the clinical environment. The exploration of embodied learning tempered with these concepts, allows a sharper focus on the traces of small daily actions that contribute to students' learning, and articulation is helpful in analysing the movement from inarticulacy through learning to distinguish the previously indistinguishable and the deployment of that newly-acquired discernment.

Learning, participation and de-centering

Lave and Wenger offer a useful way of conceptualising learning in its environment. Their focus is on apprenticeships, so although their contribution might ostensibly seem to be a better fit with the system of firms displaced by *Tomorrow's Doctors*, their exploration of what they call a participation framework allows a decentering of the individual. They contend that learning in apprenticeships is not best thought of as the acquisition of propositional knowledge by an individual, but as embedded in 'social co-participation'; it takes place in what they call a participation framework not in an individual mind (Lave, 1991 p.14). Learning is mediated by those who participate in it, and it is the community including the teachers and in this case the patients, that learns. This is reflected in the belief that a commitment to teaching is associated with quality in hospitals. Lave and Wenger argue

> *'The notion of participation thus dissolves dichotomies between cerebral and embodied activity, between contemplation and involvement, between abstraction and experience: persons, actions, and the world are implicated in all thought, speech, knowing and learning.'* (Lave, 1991 p.52)

This viewpoint facilitates the exploration of concrete relations and its significance comes from the richness of the interconnections that it illuminates, what ANT might describe as

the thickness of the description (Lave, 1991 p.39). It is suitable for medical education where teaching is acknowledged to be only one part of a learning experience that includes observation at various clinics and students clerking patients independently, not to mention 'student-directed learning', because it allows for the fact that students may learn quite other things than what they are taught: for example from their unsupervised experiences in the clinical environment when they are clerking patients, as well as from what has come to be called the hidden curriculum.

Knowing is a situated social practice, something done by specific people in specific circumstances, and learning implies personal change brought about by the system of relations in the environment, so it contributes to socialisation and the construction of identity (Lave, 1991 p.52). Lave and Wenger agree with Latour that the status quo needs as much explanation as change and that communities of practice are constantly generating their own future in terms of both practices and personnel (Lave, 1991 pp.57-8). Although because they were interested in apprenticeships, they didn't see much teaching in the examples they describe, they did see that a good deal of learning came from students' observations of their masters, peers and seniors and they conclude that learning is the basic phenomenon to be analysed (Lave, 1991 p.85). With learning as their focus they observed that opportunities for learning were structured by work practices rather than the relationships between masters and apprentices (Lave, 1991 p.93) This in turn suggests that the taken-for-granted notions of mastery and pedagogy should be decentered if we are to provide a coherent explanation for what they observed in communities of practice. Their framework led them to conclude that 'mastery resides not in the master but in the organisation of the community of practice of which the master is a part.' (ibid. p.94).

Lave and Wenger define community as 'a set of relations among persons, activity, and world, over time and in relation with other tangential and overlapping communities of practice.' (Lave, 1991 p.98). Here then the ways of understanding are embedded in social interaction, and this perspective enables a move from the type of learning (e.g. didactic, Socratic, with or without a tutor) to the practice through which the learning takes place, and how transparent it is about the meaning of what is being learned, and Lave and Wenger note that that the technologies associated with the practice carry much of its heritage (Lave, 1991 pp.04,101). From this perspective it is comparatively easy to see

that technologies understood in the conventional sense are what neophytes strive to understand and use, and it is not a big step from there to the significance of intellectual technologies as used by Rose and Latour, or to the notion that participation in practice moulds or assembles the ways of knowing or epistemologies that students acquire.

Lave and Wenger point out that language is often seen as important in classifying the ways in which knowledge is transmitted, but they suggest that language may be most significant in locating participants' positions in the community of practice. Speech is a way of acting in the world and students as peripheral participants, gain legitimacy by learning to talk and they note, to be silent, like full participants (Lave, 1991 p.22). They draw on the work of Jordan to underline the role that stories play in difficult cases, acting she says as 'packages of situated knowledge', that are processed by the community and can be passed on and used by participants as badges of belonging: knowing when to use them is as important as knowing them; a notion with parallels to Forrester and Kuhn's exemplars. The anecdotes that are such a feature of medical education are one form of these knowledge packages but it is the forms of presentation that carry the most significance, (see Chapter 10 *Rehearsing communication*).

Lave and Wenger confront the influence of pre-exiting structures informing thought and action that Bourdieu deals with through the habitus, by recognising the reciprocity between action and the reconfiguration of existing structures. Like Latour, Lave and Wenger realise that a focus on the internalisation of learning, among other things creates 'a sharp dichotomy between inside and outside and takes the individual as a non-problematic unit of analysis' and they argue that decentering the person allows a more 'robust notion of the whole person' that can encompass the various ways in which people define themselves in practice (Lave, 1991 pp.53-4).

Documents and artefacts as sources

While the emphasis hitherto has been on objective relations and the effects of mediation, it should not be to the exclusion of the ostensible meaning and connotations of documents or speech. In the case of documents, exegesis will be necessary, sometimes leading to taxonomies designed to clarify a shift in approach over time. Whilst the style, ordering, content and even tone of documents or speech may be addressed, this study

will generally stop short of the kind of inferences from discourse sometimes employed by Good and Good and Anspach for example (for a fuller discussion see Chapter 10), (Good and Good, 1993; Anspach, 1988).

An interrogation of *Tomorrow's Doctors,* the minutes of meetings, handbooks and other materials provide a starting point for exploring action, but no assumptions are made about actors sticking to the scripts: it is often the deviation from them that will be investigated. An examination of documents' validity and presuppositions, and how actors improvise around them to produce action is a step towards the participant objectification counselled by Bourdieu. Apart from their content, documents differ in terms of their scope, their distribution, their range of applicability, their form and the processes in which they are embedded, and they can also escape from these limits with unpredictable consequences: their use in this research may be an example of just such an escape (Prior, 2008 p.824).

As Prior suggests 'the spotlight is on the vita activa of documentation' and that optic allows us to see documents situationally, as allies or enemies, rule-makers or expert systems: what ANT theorists have tried to capture in their use of the term 'hybrids' (Prior, 2008 p.826). Bourdieu advises researchers to find objective relations through an examination of the network of relations between positions, and documents usually reflect, can define and are themselves very often although not always, part of network development. Documents on their own do not constitute networks, but they are forms for translating information, they leave traces in the Latourian sense, they encode and influence action and they are particularly significant in situations where institutional boundaries have to be crossed and informal understanding is problematic. Their trajectories between positions along the metrological chain may allow a visualisation of the links in a network, map traces, or as Prior says to 'reticulate 'the field' as it were' (Prior, 2008 p.832).

So documents can lead us to positions, either because they bear the traces of the contribution of their incumbents or because they are scripts for action which may be accepted, resisted, modified or subverted by them. The research uses public documents precisely because they generally represent a consensus, or indeed a position, rather than an individual point of view, ipso facto conferring a degree of objectification, but this

does not necessarily imply that they are transparent either in terms of their creation or their effects. Documents themselves and the committees and other processes in which they are embedded may be understood as mediators and also as Bourdieusian instruments of knowledge, to be turned into objects of knowledge through analysis.

The making of an organisation can reveal a good deal about the buried structures and mechanisms that inform both action and actors' assumptions, but one of the problems of investigating the making of organisations using documents is that the multi-tasking and informality which blurs positions in a small new organisation may mean less reliance is placed on writing and more on speech. As they grow, organisations tend to define positions more clearly and generate more formalised records, although there may often be some legacy or path dependency which remains understood but unexamined and ill-defined. In this case GMC visits have yielded documents that can be used to trace developments at the development stage so that combining historiography with ethnography allows the tracing of changes as responses to recognised anomalies in order to further understanding, (see Chapter 6).

Although documents are significant informants, a medical school is also host to a plethora of objects that act as mediators in the learning process, from the buildings it inhabits and modifies to the instruments for learning and practicing medicine. In the case of medicine these mediators reach out beyond the school and university premises since each teaching practice or hospital has a medical school enclave, paid for from a capital budget to provide spaces dedicated to learning equipped with computer workstations, models for practicing clinical skills, video recording, projectors and screens etc. Although they all provide equivalent equipment, placements differ in size, and of course this has consequences for the range of experience they can offer. For example a small general practice may struggle to cope with larger student groups simply because the consulting rooms will not comfortably hold a patient (possibly with a carer) the doctor and a student group, whilst a large general hospital will have a wider range of specialties and patients than a smaller district hospital. An area's demographic will influence the experience too, medical conditions associated with deprivation will not be the same as those found in more affluent areas or those with higher concentrations of elderly people. Other less obvious factors relate to the accommodation provided for the students and their distance

from their ‘home’ site, see Chapter 8 *Impermanence* for a discussion of students’ nomadic lives.

Equipment may affect learning as it does in craft apprenticeships but as counselled by Atkinson, learning with patients is accorded priority in this research (Atkinson, 1997). It may be that a reversal of ANT’s attribution of agency to objects, that is turning patients into learning objects could be fruitful, certainly Becker’s account of medical students’ taxonomies for patients provides evidence of category- rather than patient-centered medicine (Becker, 1993). It may seem de-humanising but it might help to grasp how experience with patients is incorporated into students’ modes of understanding and learning: beginning as people, patients become exemplars or as Atkinson expresses it, students hang their knowledge on them (Atkinson, 1997; Forrester, 1996). This is quite distinct from the suggestion that students learn to objectify patients in terms of their conditions.

Retrospective participant observation

Evidence from non-human ‘actants’ such as documents, the focus on practice, and Bourdieu’s concern with objectification are particularly relevant to this study to balance the author’s experience of nearly a decade of participation in the creation and running of a medical school. The author has had a degree of privileged access to the school’s work, more than could be afforded to an outside observer. In some respects this may be an advantage, in others a source of bias, and here again the use of documents and consideration of the role of buildings and equipment provide more objective evidence to set against that derived from experience, observations or interviews and conversations. Fortunately any responsible growing organisation will devote considerable effort to reflecting on its progress, and new medical schools benefitted from the scrutiny of their host universities and the GMC to prompt reflection, and they have an obligation to engage with criticism in written form. The author’s own responsibility for the monitoring of quality and standards placed him near the centre of these reflective practices but the documents from the universities and the GMC can (in the senses described above) provide a degree of externality and objectivity, see the summaries of GMC reports in chapter 7. Nevertheless the role allowed not only access to a variety of meetings with the GMC and staff members at all levels of the school and with students, but also the

need to gauge students' responses to the curriculum and both to influence and sometimes deliver staff development to clinical tutors. As already noted, it undoubtedly prompted the broader perspective adopted in the research embracing regulation, standardisation and their effects on clinical placements.

Data from observations and conversations can be enriched by a researcher's familiarity with the field, especially where complex or arcane knowledge is concerned, but this is distinct from holding, or having held a position in the organisation and enjoying some familiarity with tutors, students and others (Stacey, 1992). Inside knowledge can be useful for knowing what is going on as well as formulating meaningful questions but there are dangers too, shared knowledge and assumptions are part of the taken for granted reality which is the subject for analysis and it's hard to recognise by definition. The hope is that by following methodological prescriptions distilled from Bourdieu and ANT, sufficient distance will be achieved from the activities in clinical placement to be able to provide an account that is at once illuminating and recognisable to its participants.

In his discussion of ethnography and participant observation Atkinson draws on Gold's continuum of complete observer, observer as participant, participant as observer, and complete participant, and the experience which feeds into this research may be conceptualised as a journey between being a complete participant to a complete observer with the insertion of a category of 'retrospective participant observation' (Atkinson, 1997; Gold, 1958). Atkinson suggests that this typology could be refined by asking whether the researcher is known to be a researcher by those being studied, how much is known about the research and by whom, the nature of the activities the researcher engages in and how this situates her or him in the field and how completely she or he adopts the orientation of and insider or an outsider (Atkinson, 1997 p.249).

The peculiarity of retrospective participant observation is that the observer's 'cover' is perfect: neither he nor those he was observing could have known he was an observer. But the nature of the role of quality management does confer a certain obligation to objectivity, mitigated by the assumption that the manager is on the side of the medical school. However in the clinical environment this may be perceived as potentially critical of the practices observed there. In the role of facilitator of either staff development or communication master classes I was probably perceived as a tutor by staff, simulated

patients and students: unsurprisingly perceptions of the researcher are situationally defined.

In the observations that are the basis for chapters 9 and 10 apart from the explicit references to communication masterclasses where I was a facilitator, I was clearly identified as an observer by virtue of the process of seeking consent from patients, students and staff, a process that formally identified my activities and the research I was undertaking. Some, but not all the staff and a few students knew I had worked at the school and may therefore have perceived me as an insider rather than an outsider.

As already noted in the Introduction, all four UK ethnographies of undergraduate medical education were undertaken as PhDs. Atkinson and Sinclair were 'embedded' with students and indeed Atkinson recounts how he was asked questions by tutors, and Sinclair had already trained as a doctor before he did his research, Brosnan was a PhD student who did research in her own institution and one other, but Lempp, like the author was a member of staff although unlike him she did her research while still employed in the school she researched (Atkinson, 1997; Sinclair, 1997; Brosnan, 2007; Lempp, 2004). Generally previous research focused on the student experience, and the hope is that this author's particular experience and perspective both as a member of staff and then as independent researcher will provide a different but sociologically credible and operationally useful original account.

Access, ethics and consent

Ethnographers of medical education have tended to capitalise on the hierarchical nature of the profession through a agreements with a senior consultant whose influence is sufficient to ensure access to colleagues and patients. Sinclair and Rice discuss the pressures initially put on them to employ particular methods and in both cases how they were able to ignore these prescriptions but despite my employment in the school and because I wanted to observe clinical placement teaching with patients, I opted to follow the formal route of seeking ethical approval (Rice, 2013; Sinclair, 1997).

As already noted in the Introduction *Background and research questions*, my experience of undergraduate medical education was invaluable in understanding the importance of clinical placements and the role of the GMC, and it provided a familiarity with clinical

environments and staff, but proved to be of limited utility in gaining access. The experience of working in the school identified the centrality of patients to the learning process which in turn suggested observation with patients rather than interviews with students and staff. The inclusion of patients in turn meant that approval had to be sought from the Health Research Authority Research Ethics Committee, a demanding, sometimes frustrating but interesting process that incidentally revealed much about the operation of the NHS at a time when it was undergoing one of the major reorganisations which have lately tended to accompany a change of government. A condition of approval was that unsafe medical practice should be reported, ironically using a Code of Practice on Whistleblowing that the author himself had written for the medical school some years earlier.

It is not possible to say whether the researcher's previous incarnation as manager of quality and standards and a provider of staff development to clinical tutors was a help or a hindrance, but it was not easy to find tutors willing to be observed. Being observed teaching may be construed as intrinsically threatening and the processes of seeking consent required by the Research Ethics Committee precluded the kind of informal access on the say-so of a senior consultant reported in other studies (Rice, 2013; Atkinson, 1997). In the event the sample was made up of a relatively inexperienced tutor who hoped that being observed would be good experience perhaps in anticipation of observation by GMC teams, and others who were confident in their teaching, one of whom had been voted as the best tutor by students two years previously. They were recruited through conversations with Directors of Clinical Studies responsible for tutors in primary in secondary care followed up with a general request by email, and by direct approaches to individuals.

The sessions that were observed covered cardiology, dermatology, respiratory medicine, and neurology in both primary and acute care settings, predominantly at level 3 but including one session at level 1 and two at level 5. Out of 40 hours of observation 11 were in primary care and 29 in hospitals which included two simulations and two clinics in different specialties, the rest being on the wards. The sample included three GPs and five consultants, one of whom was observed on six separate occasions, 48 students and 52 patients. Observations were supplemented with 3-4 hours of largely informal conversations with tutors and students and they, like the observations, were recorded in

notes taken at the time and written up either the same or the following day. The codes used to refer to particular observations reflect the context, H designating hospital and GP primary care, I conversations with individuals.

Consent was obtained from tutors, students and patients for every observation. Ideally participants should be allowed time to consider any request to take part in research so once the tutors had agreed, students were notified by email and asked if they had any objection a week in advance and to sign consent forms just before the session. In the case of patients, in primary care with structured sessions, although not 'slowed-down' clinics, this is relatively unproblematic, tutors generally ask them to come to the surgery a week in advance and can then check if they object to an observer joining the students. In GP practices the researcher would usually go to the surgery reception before the previously arranged time and then go to meet the tutor when there was a time and a place to have a conversation before the arrival of either the patient or the students. When the patient arrived the tutor might accompany the researcher whilst he obtained the patient's signature on the consent form, sometimes in the waiting room, sometimes in the consultation room. At other times when sitting in on a slowed clinic, the patients would be informed of the researcher's presence and given the information sheet and consent form at reception so that they could ask to see the doctor alone if they chose.

In hospitals clinicians have to recruit patients just before the teaching takes place to ensure that they are likely to be on the wards when the students arrive, but even when tutors do this they sometimes find patients have been taken away for procedures, are asleep or eating (HmY3), (HjY3), so they tend to over-recruit. In hospital the researcher usually got the list of patients from the clinician and then talked to each of them on the wards to answer any questions they might have about the research and to ask them to sign the consent form: in fact questions were rare. In one out-patient clinic the researcher was provided with a room where he could talk to patients on their own but generally these interactions were in public areas such as the ward or a waiting room. The researcher did not meet with any refusals. Unprompted, patients often express the desire to give something back, in one case explicitly to repay the excellent care she felt she had received, or they express the view that they are pleased to be helping a new generation of doctors to learn (HaY3),(HcY3).

Discussion

This chapter proposes that much may be learned from a detailed examination of the processes along the metrological chain, from science and law to *Tomorrow's Doctors,* and through the curriculum to the means and practices of learning. It argues that in a situation where information has to cross institutional boundaries on its journey from the national to the local, the concepts and processes that are deployed have a bearing on how information is transmitted and understood, accepted or resisted and so these forms and the practices warrant further investigation.

Such an investigation required approaches capable of analysing the available sources and capturing and analysing often complex activity along the metrological chain. It exploited the fact that the modern regulatory system for medical education was established in 1993 and that the school being studied was new. Using Latour's notion of mediation, it was possible to trace how regulation developed and how the new school proceeded with its own processes for the oversight and implementation of clinical placements, (see Chapters 6 and 7). In these and other contexts the notion of inscription is used, drawing attention to the cascades by which information is translated from one locality to another within and across institutional boundaries and audiences.

Whilst such concepts as commensurability, mediation, inscription, translation and cascade will be useful throughout the metrological chain there is a particular need for concepts which can help in the understanding of how medical students bring together the intellectual and sensory skills that they need to practise medicine, and to locate action in its context. Although Bourdieu has been credited with overcoming the opposition between structure and agency and his notions of participant objectivation and relational thinking are valuable, the determinative cast of the habitus may not be best suited to address this complex learning process. The concepts of embodiment and articulation have instead been recruited to see how they may be applied to better understand the synthesis of speech and hearing, sight, touch and smell with 'theoretical' knowledge and its acquisition. These concepts may be contextualised in a relatively non-determinative manner through the idea of a participation framework that establishes learning as a central focus and privileges practices over relationships between tutors and students. In this context Lave and Wenger's identification of speech as action and its role in

legitimation echoes Foucault's 'implicit labour of language' which appears at the end of the metrological chain where the thesis turns to the examination of the co-participation of patients, tutors and patients on the wards and in the health centres that host clinical placements (Lave, 1991 p.22), (and see Chapter 10).

Mindful nevertheless of Bourdieu's exhortation to appreciate the limits of our knowledge and its 'social conditions of possibility', it is recognised that the available sources to some degree dictate the methods that can be used, and that particular methods favour certain findings (Bourdieu, 2003 p.282). The argument is that a combination of participation, observation, conversations and documentary analysis can go some way towards correcting or at least balancing methodological biases, by offering a tidier version of the pluralism that Solomon identified in medicine itself (Solomon, 2015 p.225).

Congruent with the assumption described as ANT's main tenet, that actors themselves make everything, methods have been picked to trace the links in the chain and therefore where possible they focus on the interaction between people and between people and things (Latour, 2005 p.137). Acknowledging Burawoy's idea that in an extended case study 'the product governs the process', this research follows Knorr-Cetina's exhortation to 'remain[ing] faithful to the field of observation' allowing it to speak, and of ensuring that 'ethnography remains interested in the practice rather than the cognition of its subjects', so that whether concerned with documents or technologies, spaces or time, the focus is on practice, how it is structured and what it produces (Knorr-Cetina, 1981 pp.26,19; Burawoy, 2005 p.28).

Such an approach resists recourse to deep structural processes or unobservable constructs, the unifying treatments or reified cultural structures that arguably tend to obscure rather than illuminate the traces of the translations that are explored (Downey, 2010 p.16). Although along with culture, the habitus is a casualty of this approach, other Bourdieusian insights can be deployed to show how everyday assumptions grow out of everyday activities through a focus on agents' interactions with one another and their environment. This approach holds that the examination of relations that exist independently of individual consciousness facilitates what Bourdieu calls an 'objectively intelligible' theory of practice and practical knowledge that helps an understanding not only how actors see the world but how the ways in which they see it are assembled or

built, i.e. how they come to internalise the unconscious principles that order practice in the clinic (Bourdieu, 1977 p.4).

Wary of an over-reliance on language or representation, the argument directs attention to the specific and observable by looking at what subjects do and say *as well as* what they think, and an analysis of documents and mechanisms such as rotations or body systems to see how they affect action. It peels back the bauds and bytes of competence to understand the progressive composition of a common world or in Prentice's terms to trace small daily actions to see how 'medical knowing becomes embedded though practice' (Prentice, 2013 p.135; Latour, 2004 p.212; Latour, 2005 p.207). It eschews structural processes, Baert's 'deep ontological realities', in favour of accounts that recognise the complexity of clinical placement learning, and it uses concepts designed to avoid a fragmented or reductive approach to the systems and cascades of medical education, some of which are themselves characterised by those very faults. Such a perspective rooted in practice, also allows a move back along the metrological chain to clarify aspects of regulation, to show how its implementation feeds back into standards.

This discussion has touched on wider considerations of the fundamental importance of notions such as commensurability in understanding the social, as well as what both Rose and Latour see as the struggle over the primary qualities of the body at a time when the biological sciences are increasingly claiming to explain it. Medical education is an arena where the deployment of bio-power can be traced in specific terms and where the processes of translation reveal the fissures and compromises that accompany attempts to establish commensurability. The thesis now turns to the presentation of the data, from *Tomorrow's Doctors* in chapter 6 the early history of the school in chapter 7, the environment for clinical placements, retrospective participant observations from communications master classes. and non-participant observation in hospitals and primary care in chapters 8, 9 and 10.

Part II Chapters 6-11 Tomorrow's Doctors, the new school and learning in clinical placements

6. Tomorrow's Doctors

The thesis now presents its analysis of historiographic and ethnographic data, beginning in this chapter with the General Medical Council's publication *Tomorrow's Doctors,* subtitled *Recommendations on undergraduate medical education* in 1993*,* lacking a subtitle in 2002 and subtitled *Outcomes and Standards for undergraduate medical education* in 2009. This series of three publications provided the framework for undergraduate medical education between 1993 and 2015 and they marked a significant shift in the Council's regulatory practices. The chapter examines some of the background to their creation and the changes that they proposed, and considers the three iterations to see how they reflect the Council's experience of regulation, as well the recommendations they made. It traces some of the intended and unintended consequences of the Council's determination to deal with an overloaded curriculum and the divide between the pre-clinical and clinical stages in undergraduate courses. So this chapter and the next one follow the metrological chain outlined in chapter 6, touching first on the Medical Act, then the GMC and its proposals for reform of the curriculum, its approach to standards and some of the effects on the curriculum in this chapter, and in Chapter 8 examining the foundation of the particular school and its curriculum to explore how *Tomorrow's Doctors'* recommendations played out in practice.

Standards and standardisation

The publication of *Tomorrow's Doctors* in 1993 was a significant and innovatory milestone in UK undergraduate medical education, and successive editions provided the framework for it until 2015. The focus here is both on its content and how it reflects metrology and standardisation, i.e. the construction of the infrastructure that enables facts to travel. These are processes in which as Latour, Savage and Rose all observe, the social sciences are themselves implicated, and their influence is particularly clear in the discussions of the attempts to capture students' professional behaviour (Savage, 2009 p.9; Latour, 2005. P.227), (see Chapter 8 *Background to specification of professionalism,* and *Tracking professional attitudes and behaviour through portfolios*). The intention is, as Latour puts it to blow some of the 'dust' off these fields (Latour, 2005 p.227).

In their own gloss on Latour's notion of 'black boxing', Timmermans and Epstein write 'Once standards are established, they render invisible the work required to make them possible and the uncertainty and ad hoc tinkering that accompanied standard implementation' (Timmermans, 2010 p.83; Latour, 2005 p.39). The analysis presented below deals with the inception and development of this modern form for the regulation of undergraduate medical education to illustrate how 'Through a close empirical focus on outcomes, sociologists can [also] follow the path of the collateral damage that standardisation may cause for those who defy standardisation, as well as trace the ironies of unintended consequences' (Timmermans, 2010 p.84). The argument is that some of the most evident collateral damage and unintended consequences have been to the 'educational opportunities' that informed the 'vision' of the first edition of *Tomorrow's Doctors* (General Medical, 1993).

This requires quite a detailed account of certain aspects of the texts and although the analysis will refer to the context in which they were developed, it does not draw on knowledge about the processes by which they came to be written aside from the background provided by Stacey (Stacey, 1992). Here as elsewhere in this thesis, documents are seen as mediators which 'transform, translate, distort, and modify the meaning or the elements they are supposed to carry.' (Latour, 2005 p.39). Specifically the argument is that between 1993 and 2009 *Tomorrow's Doctors* can be seen to change from document as *manifesto* to document as *manual*, from an emphasis on principle to one determined by practice, and from a concern with design to matters of fact (Fig. 2). It argues that as the GMC's programme of visits became more formal after 1993, and particularly from 2003 when it carried out a more intensive visiting programme (up to 5 visits a year) to the new medical schools, its conception of its own role shifted, and increased standardisation became an operational imperative. In particular the analysis in this chapter maps the effect of this process of standardisation on the original 1993 division of the curriculum into a core and student selected modules (SSMs).

Following Timmermans and Epstein the chapter offers a detailed empirical analysis of unintended consequences through an examination of the 'vita activa' of the 3 editions of *Tomorrow's Doctors* to trace how they influence 'episodes of social interaction and schemes of social organisation',(Timmermans, 2010 p.61; Prior, 2008 p.82). Beginning with the Medical Act of 1983 it turns to a consideration of external influences and the

perennial problems in medical education, and then follows some of the shifts in *Tomorrow's Doctors'* expression of the role of the GMC in undergraduate medical education over the past 20 years. It traces the GMC's developing recognition of the parties involved, as well as the changes it made to its recommendations such as the distinction between the core and student selected modules (SSMs), and the changes in the prescriptions for SSMs as they appear in successive editions. Timmermans and Epstein see standards as powerful, subtle, and sometimes not so subtle, means of organising modern life; and the agencies that create and deploy them as contributing to what they term 'neo-liberal rule at a distance' (Timmermans, 2010 p.80). Stacey who has produced the most informed ethnography of the GMC agreed: she writes 'the GMC is by virtue of its statutory position, part of the apparatus of the central state.' (Stacey, 1992 p.13).

Figure 2 Tomorrow's Doctors trajectories

	1993	*2009*
Document as:	Manifesto	Manual
Informed by:	Principle	Practice
Purpose:	Design	Process
Transformation from:	Matters of Concern	Matters of fact

The Medical Act

The statutory instrument for the regulation of medical education and the profession is the 1983 Medical Act, Section 5 of which charges the GMC's Education Committee with 'the general function of promoting high standards of medical education and coordinating all stages of medical education' (General Medical, 1993 p.1), and see Table 3 column 1. The Act is specific in its reference to the GMC's central obligation to concern itself with the determination of the extent of knowledge and skill sufficient to equip graduates, determining the standards of proficiency for candidates in qualifying examinations, and to 'determine patterns of experience which may be recognised as suitable for giving to those engaging in such employment … general clinical training for the purposes of the practice of their profession' (General Medical, 1993 p 1). The use of the verb 'determine' had a certain resonance in the context of universities' freedom to conceive and deliver their own curricula, and in 1993 *Tomorrow's Doctors* was careful to respect their autonomy, not least perhaps because universities' interests were represented on the GMC Education Committee that drew it up. Stacey points out the representation of professors on the Council itself had increased so that between 1979 and 1983 well over half held chairs although it is not clear whether these were honorary posts, but she also notes that the Council was 'anxious to guide rather than prescribe' (Stacey, 1992 pp.103 and 108). This first edition 'sets out its determinations in the form of a series of objectives,

which circumscribe a framework on which medical schools will build their curricula' and later, under the heading of '*Implementation of recommendations and the role of the General Medical Council'* it asserts that its objectives can be achieved in a variety of ways and that 'there is no intention to destroy the diversity and flexibility which are characteristic of our medical schools' (General Medical, 1993 pp.12 and 21).

The context

In its introduction the first edition draws attention to what it calls 'external influences for change': the shift from hospital to GP or community-based services, the necessity for constant readjustment in the face of scientific development, the increasing diversity of the population, changes in the patterns of disease, and the development of information technology, all of which it says, point to the necessity of educating doctors capable of adjusting to change (General Medical, 1993 p 4). It also underlines the importance of effective communication between doctor and patient and notes that whereas there had been a tendency to focus on individual health in the C20th, public health had now 're-entered the vocabulary' and was being reinstated as a priority in the planning of medical services (General Medical, 1993 p. 4). This list is of course as interesting for what it omits as for what it includes and as Stacey points out, the radical right in the 1970s and 1980s was suspicious of the monopoly granted by the state to the professions and perceived medicine as a trade; she writes 'the conjunction of the patients' pressure groups and the Thatcherite government undoubtedly clipped the wings of the medical profession as never before', so a concern with accountability drives *Tomorrow's Doctors* reasoning and informs some of its operational recommendations (Stacey, 1992 pp.182, 191 and 199).

The introduction goes on to address two issues which impinge directly on and are intertwined in their effects on curriculum planning:

- Curriculum overload
- The pre-clinical : clinical divide

The apprenticeship system and the pre-clinical – clinical divide

As it says there's nothing new about curriculum overload, harking back to comments made by Thomas Huxley in 1876 describing medical education as 'actually calculated to obstruct the acquisition of sound knowledge' (General Medical, 1993 p.5). It admits that despite a century of exhortations to address overload, the medical curriculum continued to tax memory rather than intellect; it says 'Attitudes to learning that are based on enquiry and the exploitation of knowledge are dulled by the excessive information load and by a system of examination that determines the requirements of study as perceived by the students' (General Medical, 1993 p. 5). It acknowledges the challenges of course development stating 'There is a persisting drive towards an unrealistic degree of completeness in the curriculum, reinforced no doubt by the understandable reluctance of quasi-autonomous departments to surrender what they see as their entitlement to teaching time.' (General Medical, 1993 p 6).

It attributes the pre-clinical/clinical divide to the fact that medical education had been developed in the UK on the basis of an apprenticeship system and that once the necessity for a grounding in basic science had been recognised, the basic science was delivered first and separately (in the first two years of the course), rather than being integrated with the clinical experience (General Medical, 1993 p.5). At the other end of the undergraduate course a pre-registration year had been introduced to deliver the ever expanding curriculum and to relieve some of the pressure on the undergraduate course, but in practice pre-registration doctors tended to be used as an extra pair of hands and their continuing training needs had been largely ignored (Committee, 1975).

This diagnosis of the twin ills besetting undergraduate medical education was therefore informed by the recognition that change had been inhibited by the structures and resistance on the part of non-clinicians following their disciplinary interests rather than the needs of future clinicians (Towle, 1998). The broad aim of *Tomorrow's Doctors* in 1993 was described as 'to promote the development of a curriculum which corrects the existing faults of overload and didacticism' and the recommendations that contributed to this aim are designed to encourage approaches and perspectives on the aims of medical education which 'differ substantially from those of the traditional curriculum' (General Medical, 1993 p. 6). These recommendations are the document says, deliberately less

precise in detail than their predecessors and they 'seek essentially to promote a new framework within which medical schools can move towards achievement of the objectives that we define.' (General Medical, 1993 p. 6).

Once it begins to address a revised curriculum framework directly, this 1993 edition is unequivocal in its account of the variation, generality and lack of explicitness in the existing curricula and their boundaries attributed in large measure to the 'semi-autonomous departments' involved in curriculum design. It says that medical curricula 'vary from school to school and they are defined in terms of general objectives and largely uncoded agreements of examiners as to what a student should be expected to know at the time of the final examinations.' (General Medical, 1993 p. 7). It continues,

> *'The Education Committee takes the view that until an attempt is made to circumscribe the requirements of the course in respect of factual quantum, the unconfined overload of the curriculum will prevail and will continue to deny students the educational opportunities to which they are entitled'.* (General Medical, 1993 p 7).

The core and student selected modules

In light of the failure of the attempt to shunt content into the pre-registration year, this time no attempt was made to move it out of the undergraduate curriculum. Instead *Tomorrow's Doctors* makes a crucial distinction between a core curriculum which 'defines the requirements that must be satisfied before a newly qualified doctor can assume the responsibilities of a pre-registration house officer' and is 'a distillate of essential knowledge and skills' on the one hand, and Special Study Modules (SSMs) on the other (General Medical, 1993. p. 7 and p. 10). In-depth study, insights into scientific method and self-critical and questioning approaches are to be encouraged in the SSMs which in contrast to the core, are not required to focus on the requirements of the pre-registration year, but beyond it on what are described as 'the long term intellectual and attitudinal demands of professional life.' (General Medical, 1993 p.7).

SSMs were defined as approximately one third of the undergraduate programme and *pace* Bloom, were expected to create the diversity and express the competition between medical schools through graduates who would be distinguished one from another by

their choices of SSMs; and they would provide possibilities for experiments in curriculum design (General Medical, 1993 pp.9 and 8; Bloom, 1995). So this demarcation between the core and SSMs not only addressed the problem of overload, but also provided a means by which universities' autonomy and students' individuality could be expressed. The distinction had the effect of focussing the prescriptions of *Tomorrow's Doctors* on to the core curriculum through objectives whose central purpose was to produce graduates capable of operating in the NHS environment.

Integration: clinical and academic responsibility

Tomorrow's Doctors evinces a sound grasp of the realities and difficulties of multi-disciplinary course development, probably a consequence of clinical professors' experience of wrestling with academic science departments on curriculum planning committees. It sought to move away from courses structured by discipline to courses based around body systems through an explicit preference for interdisciplinary synthesis, 'We strongly favour true integration of the course, both horizontal and vertical, using the term in the sense of interdisciplinary synthesis and not simply coordination or synchronisation of departmentally based components' (General Medical, 1993 p. 8).

Under the heading '*Regulation of the undergraduate course'* the 1993 edition says 'We do not interpret [this] statutory obligation as requiring us to define precisely the curriculum content or to prescribe a detailed syllabus' (General Medical, 1993 p.11). However, under *Implementation of recommendations and the role of the General Medical Council*, having made the case for change, it is surprisingly and uniquely specific about the means through which the necessary change is to be effected. It 'urges' schools to consider faculty reorganisation as a means to overcome the barriers to an integrated curriculum (General Medical, 1993 p.21), further that

> *'It is an essential rule that no teaching course or module should be planned without consideration of its role in the curriculum as a whole, such a rule demands that the working groups designing the changes should be small, but broadly based'* (General Medical, 1993 p.21).

It goes on to recommend that 'adequate' junior staff and students should be on the 'committees… responsible for the processes of education' (General Medical, 1993 p.21).

This is interesting for the light it sheds on the existing practices in medical education where the split between the pre-clinical and clinical stages was, the GMC clearly felt, maintained by autonomous academic departments in the universities planning and delivering material insufficiently tailored to the needs of medical students and clinical practice, and where battles for disciplinary 'turf' had contributed to curriculum overload. However it fails to draw any parallel operational rules from its unsuccessful experience of trying to shift the burden from the undergraduate course to the pre-registration period. Whilst accepting that the new graduates had been used as workers rather than treated as students, it does not go on to draw conclusions similar to those it draws from the experience of curriculum development in that it does not go as far as proposing mechanisms to ensure curriculum delivery by clinicians in the clinical environment. It does however allude to the challenges of devising, delivering, and above all assessing posed by SSMs in particular (see below) and these remarks may be inferred as applying differentially to clinical rather than academic staff, but they are much less specific than the recommendations about the operational structures for curriculum planning and delivery. So although the GMC is charged with 'determining patterns of experience' in clinical training and is also responsible for the regulation of the medical profession, *Tomorrow's Doctors* stops short of suggesting how clinicians themselves might be organised to deliver medical education. This edition of *Tomorrow's Doctors* encapsulates a view that the universities are responsible for the curriculum and hence for ensuring that it is properly delivered in the clinical environment as well as within the university.

The distinctions it drew and the boundaries it set provided the baseline for subsequent developments in UK medical education, and although at the time of writing, the GMC has announced the end of *Tomorrow's Doctors* and is consulting on the introduction of a national licensing examination, the early focus on operational issues as a way of achieving the Council's aims whilst ostensibly respecting universities' autonomy characterised subsequent editions of *Tomorrow's Doctors* and the GMC's approach to regulation, and arguably make it particularly amenable to an analysis that focusses on process and practice. This chapter now turns to consider the changes that took place between 1993 and 2009, starting with the erosion of SSMs and then to an examination of what the content and order of the three editions of *Tomorrow's Doctors* can relate about the GMC's interpretation of its role.

Student selected modules

One of the most significant structural innovations in *Tomorrow's Doctors* 1993 was the division between the core and SSMs. Once again we can see a concern to avoid accusations of prescriptiveness, as well as an admission about the core:

> *'If the concept of a core curriculum promotes an increased degree of standardisation of part of the medical course, the special study modules will create [that] diversity between medical schools and between individual graduates'* (General Medical, 1993 p.8).

It continues

> *'the greatest educational opportunities will be afforded by that part of the course which goes beyond the limits of the core, that allows students to study in depth in areas of particular interest to them, that provides them with insights into scientific method and the discipline of research and that engenders an approach to medicine that is constantly questioning and self-critical.*' (General Medical, 1993 p.8).

The 1993 section entitled *Special Study Modules* contrasts them with electives and intercalated degrees and says SSMs will allow all students to study subjects in depth throughout the course. What is offered will depend on the interests and resources available in the medical school and the universities and although the majority are expected to be related to medicine, because they do not have specific professional goals, their scope is also described as 'limitless' (General Medical, 1993 p.9). 'Freedom of choice in relation to special study modules will enable students to explore critically and master comprehensively subjects that excite their curiosity' (General Medical, 1993 p.10), and

> *'Many of the subjects chosen will be presented as problems that will provide the stimulus and the opportunity for students, under appropriate guidance and direction, to acquire knowledge through a process of exploration and through their own intellectual efforts'* (General Medical, 1993 p.10).

SSMs are ‘no less important than the core curriculum’ although they do not focus on the immediate requirements of the pre-registration year, and they should ‘give the greatest scope for self-expression and the demonstration of outstanding achievement’ (General Medical, 1993 p 10).

The final paragraph of the section on SSMs provides an insight into assumptions about the workload that undergraduate medical education placed on (implicitly clinical) staff, many of whom were and continue to be employed not by the universities but in the NHS and elsewhere. It says that the workload of supervision and preparation due to the difficulties inherent in the likely content of SSMs is not to be underestimated, ‘Assessment will be an additional but essential burden on staff time’ precisely because of the scope for self-expression (General Medical, 1993 p.10). Later after stipulating that the core has to be tested rigorously ‘in the interests of the public and of the integrity of professional standards’, it continues with recommendations about ‘progressive assessment’ (General Medical, 1993 p.19). However it goes on to say that, ‘The assessment of the special study module component of the course will require different, but no less important procedures’ (General Medical, 1993 p.19). It thinks it likely that the assessment methods for SSMs will vary according to the type of study but will often ‘take the form of a short dissertation’, and once more alludes to the burden of work for supervisors and examiners ‘if fair and consistent standards of assessment are to be maintained’ (General Medical, 1993 p.19). The final paragraph of this section on assessment is worth quoting in full:

> *‘The changes in the assessment system described above will require considerable modification of existing roles and practices of both internal and external examiners. Just as there is increasing emphasis on the need to provide teachers with assistance towards improving their skills, so too guidance, if not training, will be required for those who examine in the new system.’* (General Medical, 1993 p.19).

As the GMC had hoped, SSMs allowed medical schools to recruit the academic expertise of their host universities and the knowledge and experience from local and sometimes national clinical environments. They were explicitly designed to balance what the Council recognises is a degree of standardisation imposed by the framework for the core, and it

expected that the diversity they represented would be expressed at both the institutional and individual level, but it anticipated difficulties stemming from the diversity and therefore lack of standardisation in the SSM components of the course.

The next edition begins with a reflection on that first 1993 edition which it says

> *'... signalled a significant change in the form of our guidance. Our emphasis moved from gaining knowledge to a learning process that includes the ability to evaluate data as well as to develop skills to interact with patients and colleagues* (General Medical, 2002 p.4).

It continues 'Medical schools welcomed our guidance and introduced new, ground-breaking curricula', and it indicates how the present document had been informed by what it calls informal visits in 1998 and 2001 (General Medical, 2002 p.4). It asserts that its recommendations put the principles of good medical practice at the centre of undergraduate medical education, makes it clear what students will study and be assessed on, and

> *'make necessary rigorous assessments that lead to the award of a primary medical qualification*
>
> *make it necessary for all medical schools to set appropriate standards'* (General Medical, 2002 p.4).

The main recommendations reaffirm that 'The core curriculum must be supported by a series of student selected components (here 'component' replaces 'module') that allow students to study, in depth, areas of particular interest to them', and that 'Factual information must be kept to the essential minimum that students need at this stage of medical education'. Students must be helped to 'explore knowledge and integrate (bring together) evidence critically and the curriculum must motivate students to develop the skills for self-directed learning' (General Medical, 2002 p.5). The first phrase of the next section dealing with curricular content says the curriculum must be intellectually challenging and it goes on to reiterate the need for critical evaluation (General Medical, 2002 p.10).

So this new edition restates the commitment to in-depth knowledge and critical evaluation at the same time as laying more emphasis on the need for standards. Partly because this edition has shifted from objectives to outcomes it is able to be more explicit about what SSCs should do; it says they must 'support the core curriculum' and in particular must allow students to do the following:

- *'Learn about and begin to develop and use research skills*
- *Have greater control over their own learning and develop their self-learning skills*
- *Study, in depth, topics of particular interest outside the core curriculum*
- *Develop greater confidence in their own skills and abilities*
- *Present the results of their work, verbally, visually or in writing*
- *Consider potential career paths'*

(General Medical, 2002 p.18).

But whereas the 1993 edition expected that SSCs would take up a third, the new expectation in 2003 is that they will occupy 'between 25% and 33%' of the curriculum (General Medical, 2002 p.18).

The foreword to the 2009 edition reiterates that although the outcomes state what the GMC expects medical schools to deliver, schools are 'free to require their graduates to demonstrate additional competences' (General Medical, 2009 p.5). It goes on to say that in this edition it has 'responded specifically to concerns about scientific education, clinical skills, partnership with patients and colleagues, and commitment to improving healthcare and providing leadership' (General Medical, 2009 p.6). Standards have a new emphasis on 'equality and diversity, involving employers and patients, [and] the professional development of teaching staff', a rather different sense of diversity from that presented in 1993 (General Medical, 2009 p.6). Under the heading *Curriculum design and structure* it affirms that 'The curriculum will include opportunities for students to exercise choice in areas of interest' and that SSCs must be an integral part of the curriculum that 'enable students to develop mandatory competences' (General Medical, 2009 p.50).Their purpose is 'the intellectual development of students through exploring in depth a subject of their choice' but now SSC learning outcomes must be mapped on to the course outcomes, included in the course's assessment blueprint and so integrated into the students' overall assessment (General Medical, 2009 p.51). The 2009 edition also says 'The curriculum must allow for student choice from a minimum of 10% of course time'

(General Medical, 2009 p.50), a considerable reduction in the proportion of time devoted to this element of the curriculum from the 33% recommended in the first edition.

The original prescription for SSCs was successful in its stated aim of encouraging flexibility, diversity and experiments in curriculum design, giving rise to an eclectic provision of SSCs delivered by tutors from a range of institutional and subject backgrounds. However the GMC's observations about the challenges this would present turned out to be prescient, and its characterisation of the assessment of self-expression as a 'burden' on staff with hindsight may be seen as an augury but as auguries often do, it had a twist. Put simply it proved difficult to accommodate this diversity in an increasingly regulated curriculum, and this was most evident in the case of assessment. In principle the student who takes an SSC in sign language should be assessed commensurately with her colleague who takes one in biochemistry but this wide subject spread vitiates the subject specialisation on which the system of external examining is predicated. During a break in an observation in hospital, a group of students agreed that hill walking and photography should be marked differently from other more academic SSCs (HeY3). The fact that SSCs were often provided by clinicians and other non-university staff makes it easier to understand why SSC programmes came to be perceived as a threat to standards and the maintenance of quality, (and see below Chapter 7 *2004-5*). This apart, especially when compared with the methods of assessment deployed in the core, SSMs generally employed more discursive, less ordered and ostensibly less precise methods more common in the humanities or social sciences, methods that contrasted sharply and sit somewhat uncomfortably with the assumptions about and mechanisms for assessment deployed within the core.

The role of the GMC

The 1993 edition of *Tomorrow's Doctors* reproduced Section 5 of the Medical Act dealing with the functions of the Education Committee as Annex B, but in 2002 the terms of the Act are dealt with in the text and reference is also made to qualification and registration (General Medical, 2002 p.28). In 2009 the legislation appears once again in an appendix and here reference is made to the then new Foundation Programme that graduates now enter for further training (General Medical, 2009 p.82), (and see the timeline Fig 4). Considering the Education Committee's responsibilities, *Tomorrow's Doctors* 1993

speaks of the increasing need for 'vigilance in the fulfilment of our role in the interests of the public' and states that in the 5 years following its publication it will require annual reports from schools on their progress in the implementation of its recommendations (General Medical, 1993 p.22). It followed its own recommendation to ensure their implementation through informal visits between 1995 and March 1998 and found 'substantial changes' had been made to undergraduate medical education although little progress in public health promotion and slow development of assessment schemes (Christopher et al., 2002 p.282) Christopher et al claim that the informal visits led to information sharing and to 'a much more positive working relationship with medical schools' (Christopher et al., 2002 p.287). *Tomorrow's Doctors* says it will continue what it describes as its 'informal visits' but use its powers of formal visitation should it be necessary, and though in the past its recommendations had been updated every 10 or 12 years it expects in future to update them as and when necessary: as it says, 'change there must be, if the long standing ambitions of the Council and of the schools themselves are to be realised' (General Medical, 1993 p.21).

The 2 later editions go into more detail about the GMC's own responsibilities although the emphasis differs: 2002 begins with its responsibility for 'deciding the knowledge, skills and attitudes graduates need' which is relegated to third in 2009 (see Table 3), (General Medical, 2002 p.29). In 2009 the first is 'Protecting, promoting and maintaining the health and safety of the public' reflecting a recognition of public concerns about doctors following medical scandals (see the timeline in fig 4) (General Medical, 2009 p.8). In 2002 the second point is about the visiting programme to schools to check they are meeting requirements and in 2009 the second point is less specific, it is 'Promoting high standards of medical education'. Setting the standard of expertise is third in 2002 and fourth in 2009 (General Medical, 2009 p.8). Thereafter both editions address maintaining standards of expertise and checking schools' examination systems to ensure that standards are maintained.

Table 3 Priorities in Tomorrow's Doctors

	1993	***2002***	***2009***
The 1983 Medical Act Section 5	Annex B	In the text	Appendix
1.General function • *Promoting high standards of medical education* • *Coordinating all stages of it*	Update recommendations as and when necessary	Decide knowledge skills and attitudes graduates need	Protecting, promoting and maintaining the health and safety of the public' (2009 p.8)
2(a)Determine extent of knowledge and skill	No obligation to define curriculum content or prescribe a syllabus	Through reporting and visiting ensuring adequate T&L opportunities	'Promoting high standards of medical education'
2(b) Determine the standard of proficiency which is to be required from candidates at qualifying examinations ….and	Visit schools to assess the sufficiency of the instruction given. Annual reports from schools on their progress in the implementation of its recommendations (1993 67 p.22).	Setting standards of expertise	Decide knowledge skills and attitudes graduates need
2(c) determine suitable patterns of experience	Inspect qualifying examinations	Ensuring standard of expertise is maintained in qualifying exams	Setting standards of expertise
	Consider faculty organisation to facilitate curriculum integration	Appointing inspectors to report on exam standards and quality	Ensuring Teaching and learning opportunities
	Broad representation on committees	In light of visits make recommendations to Privy Council	Ensuring standard of expertise is maintained in qualifying exams
	need for 'vigilance in the fulfilment of our role in the interests of the public'	Various recognition and licensing functions	Appointing inspectors to report on exam standards
			Appointing visitors to schools to report on quality of T&L
			Various recognition and licensing functions

It may be significant that the 1993 and 2002 editions consider the GMC's own role at the end of the main text, just before the summary of the main recommendations and in an appendix respectively, whereas the 2009 edition discusses the roles of the GMC, the medical schools and, for the first time the NHS, in its introduction.

The responsibilities and duties of others

The two later editions go into more detail about the duties and responsibilities of the institutions involved in medical education; not just the medical schools and universities, but students, UK Health Departments, then NHS organisations, and finally doctors themselves.

As far as the schools themselves are concerned, the documents spell out what are called duties in 2002 and responsibilities in 2009 (General Medical, 2002 p.29; General Medical, 2009 p.10). Top of the list in 2002 is their duty to follow the GMC's recommendations, after that it turns to their duties to the public, employers and the profession. Recruitment heads the list in 2002, and in 2009 congruent with the GMCs' own responsibilities (see above), responsibility for the protection of patients. Second in 2002 comes their duty to provide the data the GMC needs, and after that assisting the work of inspectors whereas 2009 considerably sharpens the focus that was evident in 1993 on the schools' internal processes of management, and in addition on enhancement, delivery and selection, and then recruitment. Both the 2002 and 2009 editions then refer to the necessity for training teachers, trainers and clinical supervisors to understand the GMC's guidance and for them to be provided with the training necessary to carry out their roles.

2002 and 2009 each have short sections on students' duties and responsibilities that begin with their taking responsibility for their own learning and thereafter for following the guidance in another GMC publication *Good Medical Practice* from the start of their education, in particular protecting patients even if it conflicts with their own or colleagues' interests (General Medical, 2002 p.30; General Medical, 2009 p.13). In 2002, the guidance from UK Health Departments about access to patients comes next followed by a warning that pretending to be a qualified doctor is an offence. In 2009 students' obligations to provide evaluations for quality management purposes makes a first appearance, congruent with a new section on quality that appears in that edition (see below). 2002 also has a short section on UK Health Departments which it says should ensure that NHS organisations work with medical schools to ensure 'appropriate medical

training', make facilities available and be responsible for deciding how students obtain access to patients (General Medical, 2002 p. 31).

In 2009 change is heralded in the first line of the *Introduction* which reads 'The GMC, the medical schools, the NHS, doctors and students all have different and complementary roles in medical education' (General Medical, 2009 p.8). So whereas the 2002 document addressed the UK Health Departments, the 2009 edition focusses on NHS organisations which are first of all responsible for 'making available the facilities, staff and practical support needed to deliver the clinical parts of the curriculum' but also for the appraisal of teaching, ensuring that contracts include it and that staff have the time to do it, evaluate it and be trained for it: they are also explicitly required to provide 'quality-control information to the medical school about their education provision' (General Medical, 2009 pp.9,11). Doctors should follow the principles of professional practice set out in *Good Medical Practice* which include a willingness to contribute to the education of students. Hence they should develop the requisite skills including those of supervision, and provide 'objective, honest and timely assessments of the students they are asked to appraise or assess' (General Medical, 1993 p.12). They must provide feedback on students' performance, and, (surprising that it needs stating explicitly) meet contractual requirements including teaching.

The turn to standards

What is most striking about the 2009 edition is its conception and organisation. After a *Foreword*, an *Introduction* and a chapter on *Outcomes for Graduates,* the substantive and largest chapter of this document (150 out of a total of 174 paragraphs) is entitled *Standards for the delivery of teaching.* These standards are organised into 9 Domains, each of which is organised into 4 sub-sections: *Standard(s), Criteria, Evidence, Detailed requirements and context*. The introduction to the chapter explains that these will be used to judge whether medical schools are meeting standards, and the evidence that will be used to make the judgements; the *Detailed requirements and context '*expand upon the criteria, and … contain some important principles and requirements' (General Medical, 2009 p.30).

Domain 1 is *Patient Safety*, and Domain 2 is *Quality assurance, review and evaluation.* In this latter Domain under *Standard,* it states 'The quality of medical education programmes will be monitored, reviewed and evaluated in a systematic way.' The *Criteria*

deal with in order, the school's plan for organising quality control, management systems for monitoring, agreements with providers (i.e. NHS organisations and others who provide clinical placements), and the obligation to produce regular reports about the curriculum and its delivery (General Medical, 2009 p.36). It says quality data will include student evaluations and data from providers on placement, resources and assessment outcomes; as well as feedback from patients and employers: any risks or concerns about quality it says 'will be identified and managed quickly and effectively' (General Medical, 2009 p.37). *Evidence* will include school and university quality assurance documents: policies, handbooks and minutes of meetings, agreements with other providers, monitoring reports and quality-control data including student evaluations (General Medical, 2009). The sub-section *Detailed requirements and context* is just that, with cross-reference to The Quality Assurance Agency's code of practice, and paragraphs specifying that for example, policies 'must include clear information about roles and responsibilities, committee structures, lines of reporting and authority, and the timing of monitoring reports and reviews' (General Medical, 2009 p.38).

Discussion

The first version of *Tomorrow's Doctors* was careful to respect universities' autonomy, attempted to deal with curriculum overload and made much of the educational virtues of SSMs, but the 2009 edition's prescriptions are much more specific about standards and process and, apart from the recommendation about their radically diminished contribution to the curriculum, considerably vaguer on the subject of SSCs. On the evidence provided by the texts themselves then, the development of *Tomorrow's Doctors* seems to reflect the lessons learned from visits and inspections which include the GMC's growing recognition of all the parties involved in undergraduate medical education and of a need to provide a manual for inspection and inspectors. Over less than 20 years *Tomorrow's Doctors* moved closer to what Latour has called an immutable mobile, a document that will help to assure commensurability across different sites and no less important different inspectors, but in the process it has sacrificed some statements of principle to the demands of the processes of quality and standards (Latour, 1987). The innovatory and liberal character of the 1993 edition has by 2009 been replaced by a relatively high degree of formalism designed to facilitate the processes of inspection and as a result, what that first edition recognised as the more challenging aspects of the curriculum to both staff and students represented by SSCs, suffer considerable collateral damage.

The development of *Tomorrow's Doctors* did not happen in a vacuum; successive medical scandals, the evolution of the QAA and the development of quality regimes in universities and shifting notions of accountability, as well as the increase in the quantum of knowledge that junior doctors are expected to have, not to mention the GMC's own ambitions as a regulator are just some aspects of the context in which these documents evolved and to which they responded (Fig. 4). The promotion of the need to protect patients as a first priority is one of the more noticeable changes, but the shifts from informal to formal visits and the broadening institutional coverage are significant and may be seen as signs of the times. The 2002 edition unequivocally prioritised medical schools' duties to follow GMC recommendations and detailed students' and Health Departments' duties, but the 2009 edition further widens and deepens the scope for inspection by spelling out in more detail the responsibilities of universities, NHS institutions, students and doctors to provide specified data for the inspection regime, and by calling on them to reform and clarify their management procedures.

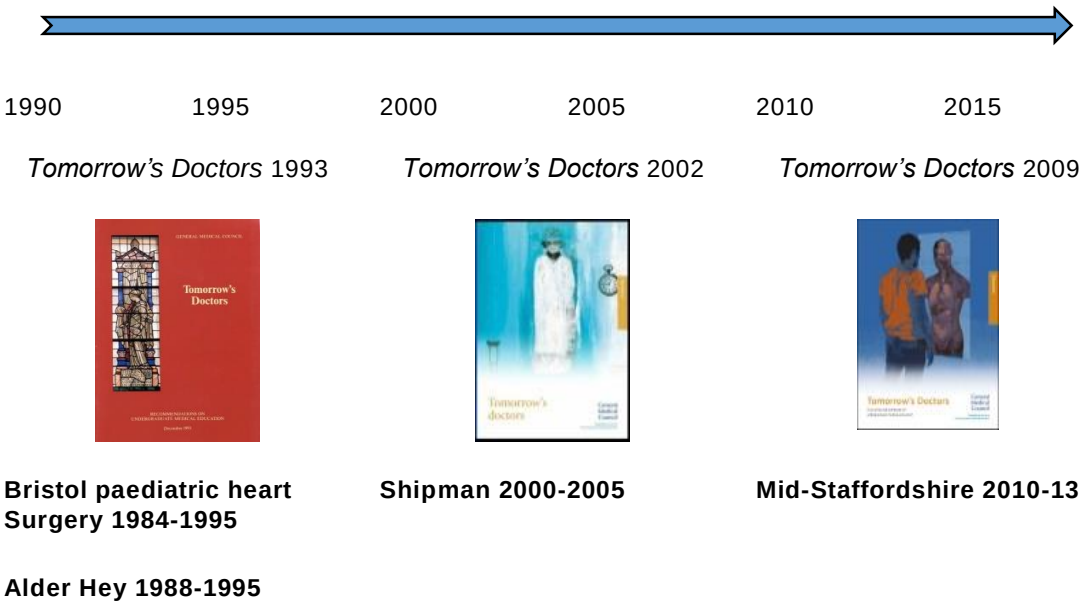
Timmermans and Epstein begin by asking how we hold standard-makers accountable and whose benefits are served, and the argument here is that *Tomorrow's Doctors* increasingly seems to serve the procedural needs of the regulator. Whether this constitutes 'neo-liberal rule at a distance' is a broader question. As they also point out 'the choice of standards of any sort implies one way of regulating and coordinating social life at the expense of alternative modes', and they identify four important subtypes of standards (Timmermans, 2010 pp.85,72)

1. *Design* standards define the properties of products
2. *Terminological* standards ensure stability of meaning over time
3. *Performance* standards set outcome specifications
4. *Procedural* standards specify how processes are to be performed

Whereas the 1993 edition of *Tomorrow's Doctors* demonstrates a concern with curriculum design, notably the problems of the clinical and pre-clinical divide and curriculum overload, the 2009 edition is more focussed on procedural standards. This account suggests that standards rooted in and addressed to procedure nevertheless have traceable effects on performance, terminology and design, and one example of collateral damage has been to the SSCs that were a cornerstone in 1993, ironically intended to counteract the 'increased degree of standardisation' that attended the introduction of a core, and the skills and values they were designed to develop (General

Medical, 1993 p.8). Certainly *Tomorrow's Doctors'* more noticeable use of the terminology of outcomes from 2002 may be seen as consistent with a focus on process that requires a more formalist, reductionist approach.

Figure 3 Tomorrow's Doctors Timeline



Whereas operational prescriptions about the need for broader representation on curriculum planning committees stood out in the 1993 edition precisely because they appeared in a document otherwise ostensibly careful to respect universities' autonomy, by 2009 the concern with internal management processes and the tighter specification of responsibilities has considerably reduced medical schools' room for manoeuvre. But there is little or no recognition of the difficulties of collaboration across institutional boundaries, particularly universities' inability to ensure compliance by the providers of clinical placements, and the focus on process and the use of an outcomes-based approach is constitutive of a particular, arguably rather narrow concept of professional training and regulation.

At a time when the health service is undergoing considerable change and the indicators employed to measure its failures and successes are both significant and contested, it is important to understand how the education doctors receive is regulated because the forms of regulation are linked to, indeed may become the standards by which they in turn come judge themselves and their colleagues in the working environment. The details of

these links demands an analysis which sees curriculum documents like *Tomorrow's Doctors* and course handbooks as mediators, as part of a network that causes people to do things, often with similarly unintended consequences (Prior, 2008 p.831; Latour, 2005 p.39).

It seems reasonable to question whether some of the faults that the first edition of *Tomorrow's Doctors* was supposed to counteract: overload and didacticism, the increased standardisation of the curriculum and the denial of educational opportunity have 20 years later, returned to haunt the undergraduate medical curriculum. The trajectory of *Tomorrow's Doctors* prompts questions about curriculum overload and educational opportunity which also bear on the perennial (if somewhat vague) question of whether medical education may best be conceived as education or as training. Timmermans and Epstein note that the line separating standards from norms is fuzzy and that vocational standards rely on implicit shared understandings and this analysis and that offered in Chapter 7 below suggest that it is just those implicit understandings and other elements that are not a good fit with the more formalised practices and competences that characterise the core which suffer when regulations and the standards they uphold are driven by essentially operational considerations (Timmermans, 2010 p.71). Educational opportunity, critical exploration, self-expression, questioning, self-criticism, breadth of learning and the long term intellectual and attitudinal demands of professional life are (as the 1993 edition admits) difficult to assess and measure and although the 2009 edition still requires students to appraise research critically, to reflect on practice systematically and continually, the liberal education rhetoric from 1993 is absent. Although still, 'It is for each medical school to design its own curriculum to suit its own circumstances, consistent with *Tomorrow's Doctors*', the prescriptions for both content and process mean the limits are now much more closely drawn than they were in 1993 and the advent of a national examination is likely to curtail further universities' freedom in curriculum design (General Medical, 2009 p.50).

Tomorrow's Doctors marked a major reform to medical education in the UK and a shift in the GMC's approach to regulation. With hindsight it is possible to discern a trajectory familiar from other attempts to regulate education such as the QAA, of methodological refinement through increasing reductionism tempered by experience leading to a 'lighter touch'. Although the first edition of Tomorrow's Doctors appeared in 1993, and the school did not open its doors to students until 2003, it was evident from interaction with the Council in 2002 that at that time it lacked the administrative resources to back up the

visiting team adequately, and the regulation of the new medical schools became the crucible in which the GMC's system of quality for undergraduate medical education was forged. This thesis is concerned with tracing how the reform affected clinical placements in a new medical school where the attempts to implement the Council's recommendations benefitted from the ostensibly ideal circumstances of a clean slate with guidance from a team of visitors, but the story is incomplete without some understanding of the background to the regulatory process

Tomorrow's Doctors may be characterised by its close focus on the delivery of medical education by the universities, barely tempered by a tardy acknowledgement of the roles played by the NHS, clinicians and students (General Medical, 1993 p 4). Although in 2009 it finally acknowledged the complementarity of roles, with the exception of its prescriptive recommendation on curriculum planning in 1993, it ignored the challenges that the collaboration between the universities and the NHS present, and the argument here is that many of the unintended consequences of its policies may be traced to the necessity of translating information across institutions along what are at best ambiguous and at worst fractured lines of authority and management.

The principal concerns which prompted reform, curriculum overload and the pre-clinical divide were largely attributed to the 'reluctance of quasi-autonomous departments to surrender … their entitlement to teaching time', and although as written the phrase could apply to clinical specialities, the context and the remedy suggest that it was university scientists that were seen as the main obstacles (General Medical, 1993 p.5). The remedies were squarely directed at the universities, ignoring clear evidence that the previous attempt to relieve overload had been derailed by clinicians' refusal to use the PRHO year for teaching. Tomorrow's Doctors does not addresses the issue of clinicians' compliance directly until 2009 when it finds it necessary to spell out that doctors should meet their contractual requirements to teach. This avoidance of the question of clinical compliance from a body that proclaims on its website that 'we set the standards that doctors need to follow, and make sure that they continue to meet these standards throughout their careers' is paralleled by its failure to reform the modus operandi of the apprenticeship system that had been explicitly implicated in the situation that had prompted reform (GMC website accessed 18/03/16; General Medical, 1993 p.5; Stacey, 1992).

The centrepiece of reform was the integration of a core curriculum around body systems and its effect was to reinforce the significance of the clinic but fragment the role of clinicians as it existed in the previous system of apprenticeship. A number of unintended consequences flowed from the retention of what Stacey calls the 'mode' of teaching and learning characteristic of apprenticeships which was thereafter unsupported by the structure, and in particular the continuity that had been provided by the firm. Here too it was the increased need for the translation of information from the clinical environment to the school and tutors' varying levels of discomfort with and resistance to the forms for its mediation that have given rise to unanticipated and conceivably deleterious effects on both staff and students' approaches to the assessment of professional attitudes, (see next Chapter 7). The Council's concentration on curricular issues echoes Bloom's point about reform without change, and the discontinuity between the mode of delivery and the consequences of shorter rotations is an illustration not only of the need to 'look beyond the curriculum' to understand the effects of change, but also to examine the knock-on effects on rotations and students' understanding of what they encounter in clinical placements (Bloom, 1995).

This chapter has shown how the demands of standardisation and commensurability imposed by a regulatory system focused on intensifying the surveillance of schools and their students, conflicted with SSMs designed to encourage diversity, a spirit of enquiry and the exploitation of knowledge to equip doctors to respond to change. The next chapter (7) explores the early history of the school and the advice it received from the GMC visiting team, going on to examine how the school interpreted *Tomorrow's Doctors'* recommendations on attitudes and their assessment. It demonstrates some of the intrinsic difficulties of encoding and capturing the attitudes and qualities deemed essential to good clinical care, as well as clinicians' discomfort with an integrated curriculum that required rotations which not only disrupted their relationships with students but also necessitated more and more specific and formal written judgements. Chapter 8 explores the context and the mode of teaching and learning in clinical placements and together with chapter 9 how the influence and hierarchy of the clinic have been enhanced and reinforced. Chapter 10 sets out the pivotal role that speech plays in medicine and medical education, using the curriculum's direction of the information flow and the method of teaching communication to unpack what Foucault terms the implicit labour of language in clinical placements.

7. The school's early history: the GMC, professionalism, assessment and SSCs

This chapter moves along the metrological chain to consider the school's beginnings in more detail: the bid that was made to establish it and a document called *The Scottish Doctor* that was influential in its planning. It goes on to look at the GMC's annual reports on the school between 2002 and 2008, then to the operational detail of its approach to professional learning, and finally its provision of student selected components (the name for student selected modules in the school). This account draws on the documents shown in table 4 below for the school's 'pre-history' and the GMC's view of it once it was up and running, but when the discussion moves on to professional learning, apart from *Tomorrow's Doctors* it uses the course handbooks, the records of achievement and portfolios that were written and produced within the school.

Table 4 Sources for the school's early history

Year	Documents	**GMC visit schedule** 1-day visits except where indicated in brackets	**School year cohorts operating**
2000	*The Scottish Doctor* (Group 2000) *Submission for a new school* (School 2002)		
2002	January: *Minutes of meeting with the Chair of GMC Education Committee* May: *Submission by the school to the GMC for an MB, BS*	Chair of Education Committee	
2003	GMC *report on School*		
2004	GMC *report on School*	March, June (2)*, July	1
2005	GMC *report on School*	March (2)*, April, June (2)*, July	1,2
2006	GMC *report on School*	February, March, June, July	1,2,3
2007	GMC *report on School*	November (2)*	1,2,3,4,
2008	GMC *report on School*	May (2)*, June	1,2,3,4,5

* 2-day visits were usually for the observation of examinations

The school was one of four new UK medical schools to be established in the early years of the 21st century to meet the perceived need for more doctors in the National Health Service, and it welcomed its first students in September 2003. These new schools were subject to a regime of up to five visits a year from GMC visitors and these visits provided evidence for the Council's recommendation to the Privy Council that the school be accepted as suitable for educating medical students for certification as doctors.

The bid for a new medical school

In the planning stage *Tomorrow's Doctors* 1993 provided the framework for the curriculum of the new school, but the influence of The Scottish Deans Medical Curriculum Group's publication *The Scottish Doctor* is acknowledged in the preface to its 2001 submission and in subsequent documentation and planning (Group, 2000 p.2).

The *Submission to the Joint Implementation Group for a … Medical School,* like other submissions made for new medical schools at the time, was the result of collaboration between two universities (School, 2000). The bid describes the local context of health and health care as well as both universities' qualifications for hosting a medical school. Perhaps reflecting different priorities at the start of the new millennium, but also in an attempt to define a niche, it chose the following in order: 'high-quality cost effective care', evidence-based decision-making, multi-professionalism, communication and public health (School, 2000 p.1). In an echo of *Tomorrow's Doctors* it went on to assert that the curriculum will be aligned to evolving needs and changes in practice, and then lays out the seven themes that will run throughout the course to provide the curricular integration mandated by *Tomorrow's Doctors*: life sciences, clinical sciences, clinical techniques and skills, evidence-based decision-making, person-centred care, population health, and managing resources. It made the rather telling observation that 'Traditional medical schools are finding it difficult to make the fundamental changes needed to produce tomorrow's doctors', and it argued that the new school could start from first principles to offer 'medical education based on need rather than custom and practice' (School, 2000 p.1). In this assertion of the difference between established and new schools is evidence to support Timmermans and Epstein's observation that standards transform by coordinating disparate elements, but that the outcomes they achieve depend on the circumstances in which they are made to work (Timmermans, 2010 p.84). The submission continued with the examination of a local context characterised by poor

health exacerbated the document argues, by high GP list sizes and difficulties with the recruitment and retention of clinical staff.

The Scottish Doctor

The *Scottish Doctor* was written as a response to *Tomorrow's Doctors* and describes itself as a project of collaboration in curriculum development involving all 5 of the medical schools in Scotland (Group, 2000 p.2). The document that resulted from this collaboration, the full title of which is *Learning Outcomes for the Medical Undergraduate in Scotland: A foundation for competent and reflective practitioners* heralds an approach that was concerned with some of those aspects of education such as critical thinking that *Tomorrow's Doctors* had separated from the core curriculum, and like *Tomorrow's Doctors* successive editions have retained the title (Group, 2000). The Scottish Deans' Medical Curriculum Group that wrote this key document did so in the period of curriculum change that followed the 1993 edition of *Tomorrow's Doctors,* and its stated purpose was to forge closer links between the 5 Scottish schools that participated in the project, as well as 'to promote the exchange of ideas on all aspects of medical education' (Group, 2000 p.1).

The *Scottish Doctor* was used in the new school's planning, duly acknowledged in its submission, and was quoted in dialogue with and responses to the GMC. As both the result and proof of a collaborative project, it was designed to be used as a tool, but distinguished from *Tomorrow's Doctors* in not being a regulatory tool. So it acknowledges it has been informed by various GMC documents including *Tomorrow's Doctors* and that it is 'in keeping with the philosophy and ideas expressed in them' (Group, 2000 p.2). It also expresses the belief that the set of learning outcomes it proposes is 'more practical and explicit' than the objectives used in *Tomorrow's Doctors* and that as such they can serve as a measureable benchmarks. Its purpose is explicitly described thus: 'The report is intended to be a 'living' document; the ideas contained within it will evolve and develop further as it is used by schools and as undergraduate medical education changes' (Group, 2000 p.3).

As these descriptions and its title indicate, the *Scottish Doctor* is pitched at a different operational level from *Tomorrow's Doctors*; it is designed specifically to assist curriculum planning by teachers and students, and in common with *Tomorrow's Doctors,* although more credibly, it is keen to convince the reader that is it not in the business of defining

modes of teaching or learning. In its Introduction, echoing but moving on from *Tomorrow's Doctors'* conception of objectives, it says 'Outcomes-based education focuses on the end-product and defines what a learner is accountable for', but it goes further by stating that learning outcomes 'determine what is taught and assessed and can help to identify what is and is not essential' and they lead it claims, to what is described as common-sense curriculum design that specifies what students will learn alongside a 'clear and unequivocal statement of what the end-product will be like' (Group, 2000; General Medical, 1993). At the same time it maintains that a clear idea of outcomes leaves open the means by which they are achieved and that its own work testifies to the fact that agreement on outcomes may be reached by schools with very different curricula. Like *Tomorrow's Doctors* it disavows any desire to provide a blueprint for a national curriculum.

It is also explicit that it is a 'living' document whose ideas will evolve, and as proof it notes that its construction has 'served to highlight areas of common interest and concern between undergraduate and postgraduate medicine, especially PRHO training, and has created valuable links between the two in Scotland' (Group, 2000 p.2). Its informal presentation and style (a word-processed pdf. devoid of artwork) also projects the picture it paints of a kind of collaborative utopia north of the border, an impression reinforced by the fact that it solicits feedback from the reader and even has a form for it at the end of the document. The outcomes are described as 'intentionally quite broad and lacking in precise detail' so that each school is able to determine its own version according to its interpretation of the outcomes and how they might be achieved: schools will it says, place different emphases on them and use different means to address them. Overlap or duplication is tolerated because it shows 'the inextricable links and interdependence between the different elements comprising a competent and reflective practitioner' (Group, 2000 p.3). Here then local universality finds expression and is celebrated, rather than being glimpsed as a largely unacknowledged, undesirable and unintended consequence (Timmermans, 2010).

Tomorrow's Doctors provided the baseline for both the school's submission and the *Scottish Doctor*, and they in turn allude to its reception and utility. The observation in the submission that after 7 years, existing schools are having difficulty making the fundamental changes that *Tomorrow's Doctors* requires is part of its pitch that a new school will be better able to adhere to its prescriptions, and the *Scottish Doctor* is a coordinated response from established schools that reflects a degree of solidarity

coupled with a reworking that is closer to the business of the planning and delivery of the curriculum as well (they suggest) as more useful in benchmarking. Once again there is evidence of the local universality and traces of the kinds of networks and influences that can lead to modifications to standards and regulatory processes (Timmermans and Berg, 1997). The successive editions of *Tomorrow's Doctors* in 2003 and 2009, did move away from the notion of objectives used in 1993 to embrace curricular outcomes and graduate outcomes respectively, a shift congruent with an increasingly widespread use of learning outcomes in universities' modular course descriptions.

Tomorrow's Doctors 1993's list of 'external influences for change' included healthcare as well as shifts of emphasis in the public sphere, but with hindsight it seems to have come from a more innocent age, one where faith in the integrity of the medical profession had not yet been dented by the scandals and concerns about the quality of care that now feature routinely in the news. To some degree these concerns (and the data that sometimes fuels them) result from successive governments' attempts to manage the NHS through indicators such as waiting times, and they serve to underline the resistance to and difficulty of measuring the quality of healthcare: we can see hints of such preoccupations in the school submission's references to cost-effectiveness.

The school and the GMC

This section explores the GMC's interaction with the school in the period which led to its recommendation that it be accredited as a provider of undergraduate medical education in 2008. It considers some of the visiting team's observations about assessment, its variability, reliability and feedback on it, the provision of SSCs, the scope of the student experience and how it is monitored, the balance of knowledge acquired by students, the balance and acquisition of clinical skills, and the use of patients and simulated patients in examinations. The author attended many of the meetings between the GMC visiting team and members of the school, and was responsible for coordinating the school's responses.

The first available record from 16th January 2002, is of a meeting between the chair of the GMC Education Committee and representatives of the universities, described as 'an informal, preliminary visit' (Item 2). The purpose of this meeting was for him to meet school representatives and ensure that they understood the process of accreditation, the arrangements for managing the process, and to answer any questions they might wish

to raise. Referring to sections 6 and 7 of the 1983 Medical Act and the GMC's statutory responsibilities, the minutes report that a visiting team had been appointed. Although at that stage it was not possible to say how many times visitors would need to examine the school's curriculum and assessment plans, the meeting was told that the school could expect at least two or three visits each year until the first cohort sat their qualifying examinations in 2008.

Moving on to the detail of the process minutes 7 and 8 read as follows

> *'7. Throughout the accreditation process, the team would undertake the following tasks:*
>
> *a. Consider and comment on the development of the … curriculum and related assessments.*
>
> *b. Observe core teaching and learning processes.*
>
> *c. Inspect examination and assessments.*
>
> *8. Once the course commences, every major student assessment will need to be observed by one or more members of the GMC team.'*

To facilitate the process, the school team was asked to prepare for the first formal team visit by considering the following (Item 19.)

> *'a. The development of a timeline which illustrates when the different components of the curriculum will be finalised.*
>
> *b. An analysis of the entire curriculum which considers the relative importance of the seven themes and provides detailed information on particular specialties.*
>
> *c. A definition of the core curriculum including an analysis of how the core is distinct from optional aspects of the course.*
>
> *d. Developing a consolidated list of core competencies for graduates of the course.*

e. Information on how course organisers plan to match clinical placements to the content of the curriculum. How will lectures or PBL sessions be delivered when students are spending 50 percent of their time in the community or in hospitals?'

In a direct expression of the aims of *Tomorrow's Doctors* the chair noted that the visiting team would wish to see (Item 24)

'a. Evidence of a balance between education and training in the proposed programme.

b. Strategies to address the burden of factual information within the curriculum'

The chair commended the school's emphasis on communication skills, asked for more information about how their plans were to be delivered and alluded to the fact that the school had not yet considered how to ensure consistency in marking portfolios (Item 28). The meeting also covered the topics of the curriculum itself, teaching, public health, general practice, fitness to practice, assessment, clinical placement, management structures and learning facilities, a list that provides an overview of the issues later addressed by GMC visiting teams.

Four months later, in May 2002 the school sent a 36 page *Submission to the General Medical Council* for the award of Bachelor of Medicine and Bachelor of Surgery (M.B, B.S), comprising sections covering basic information, curriculum outcomes, curriculum content, curriculum structure, curriculum delivery, and assessing student performance and competence. It opens by saying that the curriculum had been designed to 'provide students with a sound basis to proceed to vocational training' and that it has been mapped against the QAA benchmark of March 2002 (School, 2002 p.4). It details the aims of the curriculum that have also been mapped against the GMC's *Good Medical Practice* and explains that the learning outcomes are being developed in what it describes as an iterative process that involves 'around 200 health and science professionals in the two Universities and the NHS, working in 13 curriculum groups, each representing one of the seven themes and six systems.' (School, 2002 p.7).

It states that 'the curriculum will be covered in an integrated, problem-based programme which emphasises the acquisition of self-directed learning skills in a supported environment.' and that in Phase 2 students will be enabled to develop 'underpinning

professional values, attitudes and behaviours through imitation and practice.' (School, 2002 p.8).

Table 5 MB BS Phases and years

Phase 1		***Phase 2***		***Phase 3***
Based in the universities		*Based in hospitals*		
Year 1	Year 2	Year 3	Year 4	Year 5

In Phase 1 problem-based group tutorials, later referred to as Problem Based Learning (PBL) 'will provide clinical scenarios which require students to characterise the problems presented and the learning needed to allow their understanding' (School, 2002 p.10). A section headed 'Working with NHS partners' stresses the importance of communicating with NHS teachers in the introduction of the new curriculum and states that the school will advertise for an internal communications officer to facilitate this communication (School, 2002 p.12). It goes on to describe how a Medical Education Unit will provide the infrastructure, support and training necessary for delivering the curriculum in association with the 13 groups, that it will refine the learning outcomes, ensuring horizontal and vertical integration and detailing assessment, evaluation and quality strategies (School, 2002 p.14). Interestingly, and perhaps in response to the chair's reference to the portfolio in the January meeting, it notes that feedback in medical education 'has generally been poor' and says it will insist on high quality feedback from tutors and that training and appraisal policies will 'enable and encourage staff to do this well.' (School, 2002 p.18). Half this document is taken up by appendices dealing in more detail with the curriculum map, communication skills, pharmacology, collaboration with the NHS, criteria for academic staff, the structures for curriculum management and admissions, assessment, a strategy for quality assurance and the medical education unit itself.

In December 2003 when the course had been running for 3 months the school produced a 44 page report including 16 pages of appendices, with an additional 17 pages of supporting documentation for the GMC. More than half (17 pages) of the substantive document is devoted to 'Meeting the requirements of *Tomorrow's Doctors*', beginning with a section on curricular outcomes, and thereafter as already noted until 2008, the

school's reports are essentially responses to issues raised by the GMC visiting team. Once the course had been approved, its annual reports to the GMC follow the template that applied to all the established UK medical schools.

The GMC visiting team itself consisted of ten people, seven professors, two doctors and a medical student from another medical school. It was however unusual for them all to be present on visits; the chair and one other professor attended most meetings, but the attendance of other members was dictated to some extent by the agenda since team members had specific areas of expertise such as population health or surgery. Generally they would spend one or two days in the school and/or local hospitals and health centres observing teaching or examinations and talking to clinical tutors, academic staff and students. At the beginning in 2003 and 2004, the team tended not to disclose to the school what it wanted to look at and discuss, but by the end the team's agenda was sent to the school beforehand. The visits were normally followed by feedback meetings with school staff in the universities, generally with the professor of education who was the Course Director, the Dean and the Quality Manager as a minimum, and with other staff as necessary. Each of the annual reports from the GMC covering the previous year's visits, begins with an account of the activities carried out by the team, such as observing delivery, meetings with staff and students, touring facilities, or observing examinations, followed by an affirmation of the visiting team's satisfaction that the course is 'currently meeting the requirements of *Tomorrow's Doctors',* before going on to provide an account of the issues that were investigated and discussed with the school during the year, requirements and recommendations.

GMC visitors' annual reports

2003-4

The first team visit was in March 2004, 6 months after the arrival of the first cohort of 145 students in September 2003, and the very first substantive issues echo themes in the first edition of *Tomorrow's Doctors,* the depth of knowledge required and an overloaded curriculum (§ 9). The report notes that a PBL facilitator had encouraged students to investigate in more depth than was appropriate for the first year and that each PBL block was attempting to cover a lot of material, as well as the fact that running the PBL sessions from Thursday to Monday encouraged students to do the majority of their work over the weekend (§ 17), (§ 18). The visiting team said that whilst the new students understood

the layout of the curriculum within the PBL structure, they were unsure about how far they should go in their investigations and the visitors suggested that the provision of a book list, the syllabus for the coming years and a curriculum map could aid their understanding. A curriculum map to demonstrate the links between body systems, the forms of teaching such as plenary lectures, PBL sessions, clinical placements and assessment became something of a leitmotif in the reports, perhaps not least because it would make the visitors' job easier. However from the course team's point of view, seeing the curriculum as work in progress, a curriculum map also represented something of a hostage to fortune. At this stage the GMC team declared itself satisfied with the assessment of SSCs and what it called 'appropriate supervisory structures', although it also said it would continue to monitor them (§ 13, § 16).

An issue that reappears in subsequent reports was the fact that students kept the same PBL tutor throughout the year, and in this first report the team suggested that the school might 'wish to give further consideration to the appropriateness of this approach' because of the dangers of blurring academic and pastoral duties such that students would not have anyone to turn to who was not also involved in their academic work (§ 20). The report notes that there was little time for student reflection and the opportunity to consolidate their knowledge and that although students seemed to have completed their records of achievement, they sometimes neglected their personal portfolios (§ 24, § 28).

Among other observations about examinations, the GMC visitors welcomed the course team's plans to enhance the pre-examination briefings for examiners and simulated patients to reduce variability and they noted the fact that in objective structured clinical examinations (OSCEs) where students rotate through a series of stations, the school used two examiners rather than the more normal one at each station, and stated that one would suffice (§ 35, § 6). Students they reported, felt that the formative examinations that took place early in 2004 reflected the content of plenary lectures, but not PBL sessions (§ 38).

2004-5

This year's report returns to the issue of the curriculum map, notes that it is in progress, that outcomes have been mapped by weekly themes, and that the visiting team is looking forward to reviewing the completed document (§ 7). It says that the school had reiterated its approach to the early years of the course as moving away from a doctor-centered

approach to consultation skills, to one that takes more account of the patient's perspective (§ 8). It returns to the issues of portfolios, noting that the school is still discussing the best format, and observes that students' reflective reports are seen by PBL facilitators/personal tutors. It says that this informal system is difficult to monitor but commendable: it promises that the team will continue to monitor progress in this area (§ 21).

It then turns to SSCs, reporting that despite the efforts that had been made to counter choice being determined by geography, students were only opting for courses offered at their home university, and that due to the nature of the offerings at each, this led to different biases towards the arts and sciences on each campus, but notes that the school was trying to encourage an even balance of SSCs at each site (§ 26). The report also notes variability in the student workload and that especially when approaching examinations, students opted for SSCs which were less demanding in terms of attendance and essay writing. Then acknowledging a problem that it admits is common across medical schools, it reports that students wonder how SSC grades equate across different offerings (§ 27).

The report returns to the issue of the potential conflict where PBL tutors provide pastoral care alongside their academic responsibilities, but notes that clinical placement tutors provide a degree of continuity since they see same group of students every fortnight, hence students do have a choice of who they might approach for pastoral care (§ 50). This, together with the fact that students mentioned their access to student welfare officers, allayed the visitors' concerns about student support (§ 51). The team returned to the nature of the workload, saying that students reported it was heavy whilst acknowledging they had been told what to expect when they applied for the course, and the team revisited the issue of the PBL timetable, pointing out that second year students also commonly work throughout the weekends, and that this makes life particularly difficult for students with families and is potentially discriminatory (§ 52).

2005-6

The first main finding in this report was that the school was required to ensure that staff identify struggling students to get their clinical skills to the desired standards and then that the school should review the reliability and validity of clinical assessments, in particular the Intermediate Clinical Examination used to identify students who were

having problems with practising clinical medicine: this examination the visitors felt, should use more than two patients (§ 97, § 88). Members of the team had observed a number of SSC presentations in 2004-5 and had noted significant variability, and in 2006 they noted continuing variability in students' presentation and communication skills: some were superb, while others were superficial, didn't reflect three weeks preparation and were light on medical content, although the wide variety of topics in the SSC programme was a plus (§ 69). The team was unsure whether students managed to follow the journeys of chronically ill patients (§ 23).

2007-8

The GMC visitors expressed a concern that what they termed the 'gradation' between Phase 2 (years 3 and 4) and phase 3 (year 5, the final year) was not well understood either by tutors or students, partly they thought, because both phases used the same generic outcomes. Students had revealed their worries about a lack of structure and guidance, and had said that tutors were unclear about their role and the outcomes that they were supposed to achieve (§ 21). The educational supervisors in phase 3 reported to the visitors that they were not surprised that students felt they were not getting enough anatomy teaching although they were not consistent in their opinions about whether the student did in fact have enough knowledge of anatomy to enter the post-graduate F1 programme (§ 24).

The visitors noted a lack of structured on-call and acute general surgery experience for students, but acknowledged that the students said that they were encouraged to do both; the school too had noted the students' reluctance to take-up these opportunities (§ 27). The visitors accepted that there was no lack of opportunity, but were concerned about the variations in students' experiences in the relatively long clinical placements in the final year, and wanted the school to develop mechanisms to review students' progress (§ 32). GMC visitors noted that supervisors had observed that the students' communications skills were better than their clinical skills, and registered their concern that there might be an over-emphasis on communication skills in the OCSCE and objective structured long examinations (OSLER) final examinations (§ 30, § 56).

These reports indicate how some of the concerns of *Tomorrow's Doctors* find their form in regulatory practice, and these concerns have already and will continue to recur at various points throughout the thesis. Some are longstanding and seemingly intractable:

the depth of learning at each stage and the overwhelming workload, students' knowledge of anatomy, transitions between phases, unstructured experience on the wards, concerns about supervision and the conflict between judgement and pastoral care, and about variability and validity in assessment, issues which often come together in practice in the cases of what the GMC called 'struggling students'. Other concerns such as the balance between communication and other clinical skills are probably rather more specific to the school.

As noted in the previous chapter, assessment considerations were instrumental in the reduction of SSCs and the consequent narrowing of the curriculum, and below there is an examination of some of its effects on students' choice, and then a section on professionalism picks up what the GMC called the 'neglect' of portfolios. Assessment is a major theme both in the GMC's reports and in undergraduate medical education as a whole, and it would require another thesis to examine it properly but there will be no attempt to consider the often arcane and partisan arguments about the merits of the Hosfstee or Angoff methods for determining a pass threshold or the finer points of variability, validity, replicability and reliability that are to be found in the field (van der Vleuten in Mc Naughton N and V, 2012). Here the concern is with broader considerations such as how different assessments are construed by tutors and students, and with their effects on practice.

Professional learning and assessment

Returning to *Tomorrow's Doctors*, the discussion now focuses on professional learning, not least because as its first edition says, 'the undergraduate course is the first step in the continuum of medical education, laying down the foundation for future professional life' (General Medical, 1993 p 8). Because all the new medical schools had a clean slate on which to design new ways of addressing professional learning, one source examining the teaching of professional attitudes in UK medical schools, describes them as 'exemplars' in this regard (Stephenson et al., 2006 p.1079).

In their encoding of everyday practice, standards generally have to render the implicit explicit, but sometimes they inadvertently either ignore or recast the assumptions that underlie the processes by which judgements are made and truth is established, and in their discussion of standards Timmermans and Epstein pick on standardised tests for students as examples of this phenomenon (Timmermans, 2010 p.23; Rose, 1990 p.4).

This discussion concentrates on how professional learning was assembled, its articulation, development and assessment. So although it will also touch on circumvention, subversion and disaffection by staff and students, it will not address how students 'pick up' behaviour from their observations of the behaviour of clinicians, or the 'hidden curriculum' as such (Lempp and Seale, 2004; Seabrook, 2003; Cribb and Bignold, 1999; Hafferty, 1998), (see chapter 4). Also, whilst noting that the 2003 and 2009 editions of *Tomorrow's Doctors* include the notion of reflection (the 1993 edition refers to 'self-audit') the discussion also assumes rather than examines the notion that reflexivity is a necessary component of professionalism (Schon, 1987; Freidson, 1970). The intention is to try to uncover some of the underlying assumptions and consequences of implementation through a detailed examination of the processes that flowed from the definition of professional attitudes and behaviour.

Integration: the 'firm' and supervision

Up until 1993 clinical attachments had been apprenticeships where students spent the final 3 years of the course attached to one hospital 'firm' in each year. Firms were 'the hierarchical groups of doctors trained or training in one specialty…headed by consultants who give their names to the firm' and students might reasonably have hoped to be employed by one of them once they graduated (Sinclair, 1997 p.197). Apart from this system's particularism and the fact that it located the bulk of the student experience in the acute sector, the autonomy enjoyed by these firms had contributed at least as much to the wide variation in the student experience as had the semi-autonomous science departments whose wings *Tomorrow's Doctors* 1993 was so determined to clip.

The integrated system-based curriculum that *Tomorrow's Doctors* introduced to eliminate the temporal and intellectual divide between the pre-clinical and the clinical has had a number of consequences, the most significant of which for the present discussion, is the fact that the whole curriculum is now divided into rotations where students spend 8 weeks on (say) development and reproduction followed by 8 weeks on (say) the central nervous system, to ensure they experience an appropriate, consistent, and known menu of clinical scenarios. However, as Stacey wrote

> *'I never heard the apprenticeship nature of training, tightly tied as it is to the hierarchical structure of the medical profession, or the rota system, discussed in principle or detail in the education committee….The activities of the education*

committee in my day assumed without question the appropriateness of the mode of learning.' (Stacey, 1992 p.113).

There can be no doubt that shorter rotations split between the primary and acute sectors are unable to provide the continuity of oversight that characterised the year spent with the same team in a firm. That mode of learning allowed the members of a firm to observe students over a year and to see how they adapted to life on the wards, and it seems reasonable to assume that in most cases students might have been discouraged from immature or inappropriate behaviour or attitudes by a 'quiet word' if necessary, without the need for formal sanctions. By contrast 8 week rotations spread across the primary and acute sectors do not allow continuous guidance or oversight. Personal supervision and guidance has been replaced by a combination of formative assessment and written processes that it will be argued, affect the ways in which professional learning is conceived and delivered. The system of rotations requires that judgements about students' behaviour are measureable and transportable between rotations, and across institutional boundaries, and the regulatory tightening traced in the last chapter increasingly sought clarity, security and accountability, which has been attempted through a prism of behavioural reductionism, by separating skills, behaviours and attitudes into components (Latour, 2005; Jamous and Peloille, 1970).

Background to specification of professionalism

The 1993 edition of *Tomorrow's Doctors* specified 3 goals for undergraduate education: knowledge and understanding, skills, and attitudes, and referring to the Medical Act it says 'Whilst it is the acquisition of knowledge and skill that is emphasised in the Act, we would regard the development of appropriate attitudes as of equal importance' (General Medical, 1993 p. 12). Professionalism itself is defined in terms of attitudinal objectives which students will have acquired and demonstrated by the end of the course. There is a discernible shift in the approach of the 2002 edition which explicitly draws on what are described as the GMC's informal visits to medical schools between autumn 1998 and spring 2001 (General Medical, 2002 p.4). Whereas both editions are conceived as a framework for medical schools, the 2002 introduction says it 'set(s) out the standards that we will use to judge the quality of undergraduate teaching and assessments when we visit medical schools and ask for written information' (General Medical, 2002 p.4). As a consequence the terminology is different, reflecting the argument of *The Scottish Doctor,* with a shift from the language of goals and objectives to that of outcomes. This

leads to the deployment of more 'behavioural' verbs that have conventionally been seen as bridges to assessment tasks: knowledge, understanding, application, practice, demonstration, and ability (General Medical, 2002 pp. 8-18). The move to outcomes as *The Scottish Doctor* makes clear, focuses on learner accountability and the end product, as well as specifying what is taught and assessed and what is essential.

So the switch from objectives in 1993 to outcomes in 2003 as the chief organising principle is part of an attempt to provide a clear linked hierarchy from principles through to the specifics of practice to allow, as the 2003 introduction claims, more clarity about what will students will study and be assessed on, and will:

- *'make it necessary for all medical schools to set appropriate standards; and*

- *make necessary rigorous assessments that lead to the award of a primary medical qualification'* (General Medical, 2002 p.4)

Both editions, sensible of universities' autonomy, stick to the claim that they are providing a framework, but in 2003 skills are specified in greater detail and there is more use of the language of necessity and rigour. This edition did indeed provide a template for the teams visiting medical schools, and the one that followed in 2009 again reflected the experience of regulation and contains further refinements where outcomes and standards assume still greater prominence. Between 1993 and 2002 (and indeed to 2009) there is no discernible change in direction rather, as the 2002 introduction makes clear, it is the fruit of the experience of operating with the 1993 document; a textbook example of practice feeding back into standards.

The assessment of professional attitudes and behaviour

It is a commonplace that assessment drives learning and especially so in medicine where despite the GMC's efforts, and as evidenced by its own reports, students continue to feel overwhelmed by the quantity of material they have to learn, and their year is punctuated by frequent formative and summative assessments, see the Appendix on Assessment. *Tomorrow's Doctors* 1993 recognised both this and the consequences of certain forms of assessment, students it says 'are reluctant to afford time to explore areas in which they will not be examined' (General Medical, 1993 p.18). Moreover,

> *'papers in the multiple choice format tend to put a premium on the acquisition of facts at the expense of reasoning and the attainment of the educational goals we have highlighted.'* (General Medical, 1993 p. 18)

Under the heading of '*The Principles of assessment'*, and consistent with its shift towards a more regulatory stance, the 2002 document is unequivocal: 'Professional attitudes and behaviour must [also] be assessed' and this is reaffirmed in a later paragraph which reads 'When students get close to graduating, their knowledge, skills, attitudes and behaviour must be thoroughly assessed to determine their fitness to practice as PRHOs.' (General Medical, 2002 p.22). Clarity is paramount, there must be

> *'clear indication of how the scheme of assessment deals with all the curricular outcomes and of how those outcomes have been met. Students must have clear guidance about what is expected of them and examiners be trained to carry out their role assisted by clear marking guidelines.'* (General Medical, 2002 p.23)

Tomorrow's Doctors 2003 also says 'Students must receive regular, structured and constructive appraisal from their teachers during the mainly clinical years of the curriculum' (General Medical, 2002 p 23)

Assessment: form and legitimacy

The adage 'what gets measured gets learned' applies to medicine more than to most undergraduate programmes, and the quantity and variety of assessment is exceptional, as exemplified in the Appendix. Medical education has developed a variety of methods of summative and formative assessment for the core curriculum: (OSCEs), (OSLERs), and (*pace* the reservations expressed in *Tomorrow's Doctors* 1993) written examinations comprising multiple choice questions (MCQs), extended matching questions (EMQs) and modified essay questions (MEQs), whilst non-core components such as Student Selected Components (SSCs) may be assessed by essays, presentations or other means. There is what might be called a reciprocal relationship between different elements of the course and their assessment such that the modes of assessment associated with clinical practice are legitimated by that association whereas the other modes employed for example, in SSCs or as will be made clear, the Records of Achievement in clinical placement are likely to be perceived as less reliable and in some circumstances, even manipulable.

The perceived legitimacy of particular forms of assessment may also partly be related to whether they are closed or open, and what, to borrow Strong's phrase we might term their 'ceremonial order' (Strong, 2001). The core curriculum is assessed through closed examinations; first the OSCEs that require the sequestration of students to ensure they cannot pass details of the cases on to their colleagues who come after them, and that therefore make considerable and highly visible demands on administrative, technical, clinical and academic staff, not to mention patients and simulated patients. Typical staffing for one OSCE on just one site is as follows

- 18 simulated Patients (working in pairs alternating throughout the day i.e. relating to 9 stations)
- 18 healthy volunteers (working in pairs alternating throughout the day i.e. relating to 9 stations)
- 14 assessors (allocating marks)
- 6 invigilators (monitoring stations not requiring on-spot assessment, stewarding etc.)

Secondly there are closed written examinations that are more like the traditional examinations most students will have experienced throughout their education. Taken together, clinical (OCSCEs and OSLERs) and written assessments are the culmination of the student year and in Phases 2 and 3 i.e. the last three predominantly clinically-based years, they contribute directly to students' assignment to the quartiles that inform the competition for places on Foundation programmes following graduation. These closed summative examinations represent a gold standard, and other assessments of which there are many, assume lesser significance.

Although the formative and summative OSCEs and OSLERs include a consultation with patients, simulated patients or healthy volunteers, these comparatively short interactions are not thought to provide sufficient information to judge the development of professional attitudes and behaviour. *Tomorrow's Doctors* 1993 states 'We would recommend the development of a system of progressive assessment that monitors the acquisition and utilisation of core knowledge, that explores attitudes, and that requires certification of the achievement of competence in the skills demanded by the course' (General Medical, 1993 p 19). It goes on to note the necessity for careful monitoring and refers to the fact

that schools have developed 'effective logbook or computer-based systems for recording student experience and performance; some have built into their systems the collection of data relating to the fulfilment of teaching contracts and the quality of teaching.' (General Medical, 1993 p 19). In practice the systems are not quite as effective as *Tomorrow's Doctors* 1993 assumed, and to see why it is necessary to go further along the metrological chain to consider the processes that are used to develop and monitor professional attitudes and behaviour in the curriculum.

Tracking professional attitudes and behaviour through portfolios

The Staff and Student Handbook (2005) prefaced its explanation of the Portfolio used to develop and assess personal and professional development with this quotation from the then current edition of *Tomorrow's Doctors*

> *'Students must receive regular and consistent information about their development and progress. Clinical logbooks and personal portfolios, which allow students to identify strengths and weaknesses and to focus their learning appropriately, can provide such information. Using these will emphasise the importance of maintaining a portfolio of evidence of achievement, which will become necessary once they have become doctors and their licence to practice is regularly revalidated. Feedback about performance in assessments helps to identify strengths and weaknesses, both in students and in the curriculum, that allow changes to be made.'* (General Medical, 2002 p 21)

Personal and Professional Development is not an explicit curricular theme in this course, 'but its elements are included in other Themes' (Phase 1 Staff & Student Handbook 2005 p.26) and the course planners show they were well aware of the dangers of too literal a reading of *Tomorrow's Doctors.*

> *'We want you ultimately to be capable of driving your own progress; and the primary purpose of at least some of the portfolio exercises must be to develop these capabilities (curiosity, accountability and self-motivation), not simply to produce a reductionist measure of "competence" or "professional attitude"'* (Phase 1 Staff & Student Handbook 2005 p.60).

The handbook states that elaborate specifications of the portfolio boundaries and assessment criteria are unable to demonstrate a candidate is a competent professional. It explains that the portfolio is part of an assessment strategy; as it says the more data points, the more likely they are to build a picture of student's progress or a timely identification of potential problems (Phase 2 Staff & Student Handbook 2005 p 38). But 'it may not be able to devise a highly structured, completely reliable means of assessing personal portfolios given the individual and highly varied nature of the experiences on which the information gathered will be based.' (Phase 2 Staff & Student Handbook 2005 p.37)

Here is an explicit recognition that assessment against specific outcomes and criteria on the one hand, and individual and individual personal growth on the other are contradictory goals, so the Portfolio consists of two separate sections: a Personal Portfolio and a Record of Achievement (RoA). The Handbook describes learning from experience as a 'personal affair' so the portfolio has to be both personal and public, 'personal in the process of reflection but public in the demonstration of professional behaviour' (Phase 1 Handbook 2005 p.25). The Personal Portfolio is a personal record of students' learning which 'helps in assessing some aspects of professional behaviour that cannot be measured in formal examinations' it is separated from formal assessment but it is checked for completion (Phase 1 Handbook 2005 p.25). The RoA on the other hand is inspected by examiners and required for progression; its purpose is

> *'to gain reliable evidence for fulfilment of learning outcomes that are difficult to appraise in other ways, mostly to do with development of professional behaviour and values, but secondly to develop your skills to assess your own strengths and weaknesses in these areas.'* (Phase 1 Handbook 2005 p.60)

The study guide given to all students for each rotation has sheets for weekly notes designed to prompt reflection, and in Phase 1 these notes should feed into a discussion with the students' PBL facilitators, as noted earlier in this chapter in the GMC report for 2004-5. This discussion should also be informed by results from formative examinations, a written reflective exercise and a reflective essay about a critical incident and it results in an 'Educational Prescription' that indicates to students where they should apply their efforts in the future.

Table 6 Comparison Portfolio and Record of achievement

Personal portfolio	Record of Achievement
Personal	Public
Not assessed but checked for completion	Submitted and assessed at the end of each block and shown to each new Educational Supervisor
Reflective	Reliable evidence of the achievement of learning outcomes
Both should feed into discussion with a tutor	

So in Phase 1 (the first two years) the PBL facilitator provides personal continuity, but to map their development thereafter, in Phases 2 and 3, students become responsible for the submission of their RoA forms by the end of each block. In the three final years spent on clinical placement every student had an Educational Supervisor for each 8 week rotation, so because of the lack of personal continuity the judgement of professional development was dependent on these written records. In these phases the RoA forms should contain staff reviews of students' clerking records and the results of the formative OSLERs that take place towards the end of each block as well as their Educational Supervisor's account of their reflective essays and of their performance of professional responsibilities. To maintain some continuity students were expected to show each new Educational Supervisor their past records of achievement when they began each rotation but according to the supervisors, this rarely happened.

Stephenson et.al report that the robust assessment of attitudinal behaviour by tutors is compromised by their doubts over what is or is not appropriate, a fear of being subjective or unfair, anxiety that they might simply be describing immature behaviour, or over-reacting to an isolated incident (Stephenson et al., 2006 pp.1077-8). Indeed some supervisors in the school said that they found it invidious to be asked to assess a student whom they may hardly have seen on the basis of an 8 week placement. In theory supervisors are supposed to consult colleagues about students' behaviour and progress, but in practice this is sometimes difficult to achieve, involving as it should colleagues across sites in the primary and acute sectors. Even if supervisors do see enough of students and are able to consult their colleagues about them, they are normally reluctant to convey doubts that may blight a student's career on the basis of so short an acquaintance and at most two or three meetings.

Tutors are supposed to judge professional attitudes and behaviour by observing students, but what they observe leaves no trace, as the handbook says experiences are 'individual and highly varied' and judgement relies on individual impressions, so it is difficult to

calibrate or moderate them. Berg tells us about the differences in the judgement of abdominal pain between departments and hospitals, and it's reasonable to infer that judgements of students' behaviour will differ in similar ways (Berg 1997). Certainly students think so, and there is evidence that they will seek out what Swanson and Roberts term 'dove' assessors to complete sections of their RoAs (GPaY1), (Swanson and Roberts, 2016).

There are other disincentives created by the proliferation of (re)coding and evaluation in higher education. A survey of Clerkship Directors in North American medical schools on the reasons for grade inflation in clinical placements, reports that the most common reason for this inflation was because staff wanted to avoid dealing with angry students, were mindful of the danger that failing students could give them (the staff) unfavourable evaluations and, reinforcing this concern, they worried that inadequate documentation could provide evidence for legal redress (Fazio et al., 2013). What seems to be happening is that the suite of evaluative mechanisms that apply not just to students, but also to staff combine to discourage staff from failing students. In this example forms interact with one another to subvert their purposes; a case of how a concatenation of forms, necessary for the translation of observations from site to site can, under certain circumstances undermine the purposes they were designed to fulfil (Latour, 2005). The tension between the assessment of clients and evaluation by them can have consequences for professional judgement, indicating that the implementation of client evaluation demands careful consideration of the context into which it is being introduced.

Multiple data points may help to provide reliability, but particularism didn't of course magically disappear with the old-style clinical attachments in firms; rotations merely serve to limit its effects. As the Appendix indicates, the undergraduate curriculum is peppered with formative and summative assessments designed to give students insight into their own development, but it is difficult to maintain consistent standards and the lack of consistency is apparent. The GMC report on the school's second year of operation noted 'initial student grumbles' about portfolios and the difficulties of monitoring them, but also that students were beginning to perceive their benefits and were giving positive feedback (Report of the Visiting Team 2004/2005 paras 20 and 21). Despite the GMC's finding, in 2011, 8 years after the first students arrived, contract review meetings with NHS Trusts and discussions about students' responses to the National Student Survey concluded that student's unhappiness with the feedback they received from tutors was likely to be due to the discrepancies they perceived between the formative comments

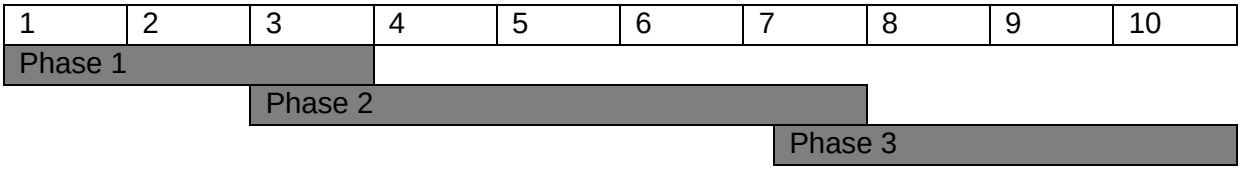
from clinical tutors and their summative results (NHS review meetings 12/10/2011, 31/10/11, 2/11/11, 3/11/11). Students who were failed in summative assessments were understandably puzzled and aggrieved when they felt that their tutors had not flagged any problems in the formative ones: experiences like this fuel a degree of cynicism about formative assessment in general and, because it relies exclusively on formative devices, professional learning in particular.

Calibrating behaviour

These observations indicate that the difficulty of tracing and correcting what tutors may perceive as inappropriate behaviour is sometimes inhibited by the need to record it. If, for whatever reason, tutors do feel uncertain of their own judgment, they may not wish to record observations which might prejudice a student's career and colour the perceptions of subsequent tutors. In this school, tutors' discomfort about these types of written assessments was managed at their own request, at both undergraduate and postgraduate levels, by the creation of descriptions to express students' progress along specified dimensions. The attempt to move from the particularism of clinical attachments to the varied data points in rotations provides an example how the tacit is made explicit, and in particular how a metrology develops: the descriptive scales or inscription devices that result have the effect of reinstating reductive scales for behaviour and attitudes (Latour, 2005 p.230).

The RoA included forms designed to calibrate students' development to provide a permanent and transportable record for the central administration of the course. In the school's early days the process of calibration was unfamiliar to clinical tutors because the scale extended over the whole course, and most tutors (explicitly or not) had been operating with what might be termed more relative or situated forms of judgement appropriate to the continuous supervision of the apprenticeship mode. Possibly as a legacy from the year-long attachments in firms, they were used to judging whether a student was operating as expected for (say) a third year student, and they found it difficult to adapt to a new scale. This is how the course-based judgement is expressed in the RoA booklet where 10 is the level of expected of a graduate ready for entry to the foundation years:

Table 7 Student achievement by phase



So in practice in phase 2 for example, having taken advice from the rest of the teaching partnership, the Educational Supervisors completed the section that relates to professional behaviour, and to help them do so the RoA booklet provided descriptors for professional behaviour that cover:

- relationships with patients,
- awareness of ethical and moral aspects of the subject,
- the ability to deal with uncertainty and awareness of limitation,
- evidence of self-education, enthusiasm and motivation,
- teamwork,
- dress, attendance and punctuality.

These descriptors formed the vertical axis of a 6x4 matrix which had the conventional categories used in medical education assessments of excellent, satisfactory, borderline and unsatisfactory as its horizontal axis. To take the example of awareness of ethical and moral aspects of subject

Table 8 Descriptors for ethical awareness

Excellent	Satisfactory	Borderline	Unsatisfactory
An excellent ethical awareness in practice and theory. Actively participates in ethics discussions and raises ethical issues in everyday teaching.	Able to elucidate ethical issues well and no problems in practise	Not as aware of ethical principles as should be, not actively participating in ethics discussions	Some failures to take ethical considerations into account in own practise, disputes need for ethics teaching, unaware of general ethical and legal principles.

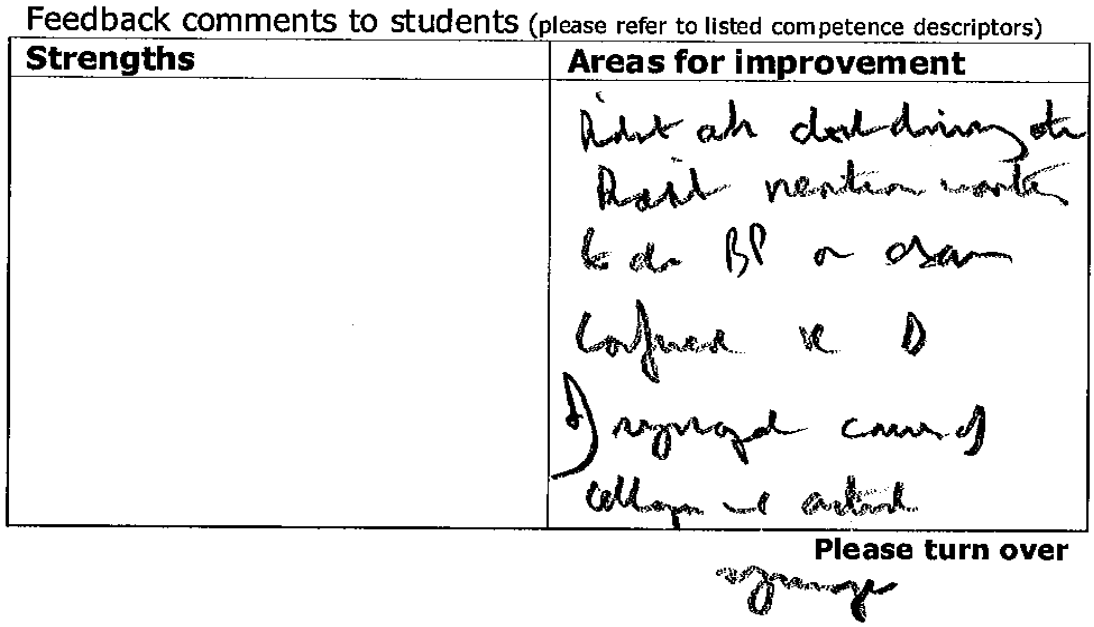
In theory then the educational supervisor asks her colleagues who have taught the student to give her their opinion of his or her performance along these axes, and based on their reports she reaches a judgement that is recorded in the RoA. From this description it is evident that if everybody in the chain keeps meticulous records of every session and it works as it should, this process is still likely to be rather broad brush and to be consensual. One tutor was explicit about the difficulty of keeping track of students' professionalism because of the fragmentation consequent on rotations. She noted that with the present structure it was only the PBL tutors who maintained contact with individual students in the first two years who could judge who might be unsuitable and that the default mode in the university was to work to improve them. The judgement of clinical tutors could not be brought to bear until year 3, as she put it 'a bit late' (IhY3). Effectively she said students could only be 'chucked out' if they failed examinations that did not cover what she termed 'their suitability' (IhY3). Another GP tutor who was an educational supervisor described the RoA system as 'a bit of a joke', not least because 'You can't write much of it down' and there are disagreements between tutors about student performance (GPbY3). This underlines how difficult it is to get away from reductionist measures of professionalism when it comes to the maintenance of the records that are necessary to track students' development or to prompt and justify intervention. This focus on how information is circulated, 'translated' in Latourian terms shows how the forms and the relationships they require can 'transform, translate, distort and modify the meaning or the elements they are supposed to carry' (Latour, 2005 p.38).

But on top of its intrinsic problems, in practice the system didn't work entirely as intended. The school administration commissioned a review of assessment processes in 2007

which confirmed that students often handed their RoAs in late and that sometimes tutors were responsible for not completing the forms on time. It recommended a combination of online entry of information and increased administrative support to try to ensure that information was received in a timely manner and an online system came into operation in 2012.

There were also more mundane difficulties with the RoAs, sometimes one word comments or, like the following example, several illegible comments

Figure 4 Example of RoA comment


Feedback comments to students (please refer to listed competence descriptors)

Strengths	Areas for improvement

Please turn over

SSCs in the school

Another example of the effects of the form of assessment is provided by the early history of SSC provision in the school. The SSC programme was designed as a market where various would-be providers from the hospitals, practices, the universities and elsewhere submitted proposals to a committee set up to oversee the provision. Providers had to write a short description of the course they were offering, specifying the topics that would be covered each session, the learning objectives, the timing and the assessment and a price for doing the course. Once approved these course offerings were put on an SSC website and each student had a budget which they used to 'buy' courses. The SSC website had a section where students could rate the courses, in addition to the school's

quality processes which collected questionnaire data that was also made available there and elsewhere.

As noted in the 2004-5 GMC report students tended to choose courses from their home campus to avoid travelling, and they also looked for courses with a low workload. However after 2 years it became apparent that another important determinant of choice was the mode of assessment: SSCs assessed by essays were generally less popular than those assessed through presentations and soon the majority of SSCs were being assessed through presentations. In a break in an observed session in 2014, students said that they had picked SSCs that were assessed by presentations (GPaY1). Given the predominant modes of teaching and learning in medical education this should not have been surprising, quite apart from the perceived burden of essays for both students and staff, students had become accustomed to and practiced in using the spoken word in the clinical environment. Aside from its familiarity the use of presentations also allowed knowledge to be shared and public, unlike written communication which is essentially private, students could learn from one another. By attending their peers' presentations they might not only learn more about the topic but also different styles of presentation and how they were assessed.

From the school's point of view, compared with essays, the assessment of presentations is relatively resource-intensive, requiring rooms, equipment and the presence of the tutor, and they pose problems for moderation. As already stated, one of the problems that SSCs presented was fitting them in to a system of external moderation, difficult enough when the assessment is written, but even if presentations are recorded, the traces they leave, the power-points, the scripts, the prompts or flashcards etc. exclude the most significant component, the individual or group's participation, and even audio or video recordings rarely do justice to the live event. As already noted earlier in this chapter, the GMC visitors who observed an assessment by presentation also expressed some reservations about the judgements that had been made (see 2004-5 GMC report).

Discussion

In *Governing the Soul* Rose explains how the management of subjectivity has become the business of public powers and modern organisations and how it has given birth to new expertise in its classification, measurement and remediation, and Foucault describes discipline as a form of power made up of 'a whole set of instruments,

techniques, procedures, levels of application, targets' that order 'human multiplicities' (Rose, 1990 p.3; Foucault, 1977 pp.215,218). Rose shows how in the inter-war years, 'attitudes [then] bridged the internal world of the psyche and the external world of conduct' (Rose, 1990 p.23). Both are concerned with how systems of truth are established, the apparatus of truth and the procedures through which it is realised. Rose draws attention to the processes of 'inscription' which translate the world into material traces that can be used in administrative decisions (Rose, 1990 pp.4-5). His book gives an account of how the sciences of the psyche provided the vocabularies for the 'knowledgeable management of the depths of the human soul', and their invention of techniques to make individuals' capacities visible by devising how they could be inscribed in legible form; an example of the social sciences' implication in standardisation (Rose, 1990 p.7). Rose writes

> *'The history of the self should be written at this 'technological' level, in terms of the techniques and evaluations for developing, evaluating, perfecting, managing the self, the ways it is rendered into words, made visible, inspected, judged and reformed'* (Rose, 1990 p.218).

In medical education the inscription processes and the forms that have been designed to develop and keep track of professional learning and its assessment have had to make explicit much that was formerly implicit and embedded in an abandoned form of organisation, the firm. This is not simply some trace of the 'audit society' because as Latour observes, forms are not merely intermediaries, they are mediators because they make people do things (Latour, 2005; Power, 1997). This new school, whose planners were fully aware of the difficulties posed by the reductionism of an outcomes-based approach, developed systems to try to develop and assess professional learning. Their efforts were to a degree undermined by among other things, tutors' responses to the requirement to provide written categorical judgements with requests for definitions that effectively reinstated elements of a reductionist approach.

The processes associated with professional learning have to be seen in the context of the curriculum as a whole, and in particular in relation to the diverse modes of assessment in undergraduate medical education. Quite apart from its low ranking in the visible ceremonial order in this context, the assessment of professionalism through the portfolio and the Record of Achievement lacks the backstage subject-based checks and balances of moderation and external examination that are now applied to written

examinations, and clinical examinations assessed by observers. The reliability provided by the increase in data points may seem more equitable than the particularism that was inherent in the firm, but it assumes a degree of equivalence and consistency in tutors' standards of judgement that is contradicted by students' experiences in clinical placements. In what is still an overloaded curriculum, the portfolio's relative informality, not to mention what might be termed its permeability and manipulability affect its credibility and legitimacy in comparison with the apparatus and ceremonial order of other examinations, and hence how seriously it is taken by students and staff alike. In Habib and Wittak's terms students 'master' portfolios, i.e. use them without affecting thinking or behaviour, rather than 'appropriating' them i.e. incorporating them into their thinking and behaviour (Habib and Wittek, 2007). The observations of their use in this school indicate that students' mastery of the system may be as likely to teach them how to game the system as it is to reflect on their behaviour, although of course it may do both, and given that portfolios have become a plank of the appraisal system, these attitudes are likely to carry over into professional life, see below.

More generally, this analysis has traced further consequences of the GMC's attempt to eliminate the pre-clinical/clinical split and the variability and overload in the undergraduate curriculum. The move away from an apprenticeship characterised by a relatively informal if particularistic socialisation into professional attitudes by mentors in a firm, to an integrated system-based curriculum that requires a new and more formal system of rotations, also demands the development of formal techniques for developing, managing and recording capacities, attitudes and professional learning. As far as clinical placements are concerned this reform may be seen as a shift from a relatively informal team-based to a more formal subject-based curriculum but in the areas of professional learning which is assessed across rotations, just like SSCs, it lacks an apparatus for moderation and oversight across the different elements. So whilst the problems of variability in course content and particularism may have been addressed, the multiple data points consequent on a subject-based curriculum rely on an unwarranted assumption of agreed standards between tutors.

If as *Tomorrow's Doctors* 2003 says, the undergraduate course is intended to lay the foundation for future professional life and to prepare students for regular revalidation, then one might want to ask with Rose, what tomorrow's doctors (and the public) might conclude from 'the concepts, rules, authorities, procedures methods and techniques through which truths are realised' (Rose, 1990 p.4). The failure of both staff and students

to return RoA forms may be an indicator of the prevailing attitude to this aspect of the curriculum; neither group would fail to attend closed examinations without a very good and justifiable reason. The components of the portfolio, designed in good faith to encourage professional learning, make relevant and useful demands on students and encourage the reflection that is seen as a necessary condition for professionalism, but the regulatory and curricular frameworks within which they are set and that to an extent determine the processes they employ, stress the exchange value of learning rather than its use value (Lave, 1991). Evidence from a study of the Annual Review of Competence Progression (ARCP) for graduate doctors in training which uses an e-portfolio supports this argument. Trainees criticised the ARCPs 'tick-box' nature, saying that it assessed them on clerical rather than clinical ability, encouraged minimal competence instead of excellence, and that they were able to select only positive assessments for their portfolios as well as dove assessors (Viney et al.). The study of ARCPs suggests that indeed one of the things students learn is how to 'game' the system (Berwick, 2013; Bevan and Hood, 2006).

This analysis is unusual in the literature in going as Bloom suggests, beyond curriculum content to show how *Tomorrow's Doctors'* reforms played out in practice by tracing the mechanisms of its implementation, without recourse to the 'hidden' or to 'culture', but by identifying the interaction between intended and unintended change (Bloom, 1995). Examination of the techniques for managing the self elucidates the participation framework, linking *Tomorrow's Doctors'* recommendations, the school's interpretation of them and the tutors' responses, thereby decentering individual learning and indeed particular techniques of assessment by situating them in the context of assessment techniques in the course as a whole.

These first two empirical chapters have covered not just the wider environment for teaching and learning as Bloom counsels, but have shown how *Tomorrow's Doctors'* reforms have been modified by their implementation, and these modifications could not have been revealed by a focus on the learning and teaching in clinical placements alone (Bloom, 1995 p.908). They required an analysis of what Star referred to as the 'boring things', and a sociology of associations that shows how the integrated curriculum that entails relatively short rotations and the operational details of the assessment of professionalism, combine with the pressure on the curriculum and the separation between the core and SSCs, together with the difficulties of internal and external moderation in assessment, to impinge on the community of learning (Clarke, 2010 p.591).

Thus in terms of Bloom's argument, this analysis indicates that 'look[ing] beyond the curriculum' is not simply a question of ignoring it to focus on the environment, but of uncovering its unintended consequences, and what Timmermans and Epstein call collateral damage (Timmermans, 2010; Bloom, 1995 p.907). These unintended consequences of reform are below the radar of conventional ethnographic observation in the clinical environment, but they affect students' understanding of approaches to professional values, in-depth study, insights into scientific method and self-critical and questioning approaches, or as the first edition of Tomorrow's Doctors puts it 'the long term intellectual and attitudinal demands of professional life' (General Medical, 1993 p.7). However these examples are what Bloom would call direct attempts to encourage change by adding elements to the curriculum, and the thesis now turns to what he terms socialisation by focusing on behaviour in the professional environment of clinical placements, see next chapter (ibid. p.907).

8. The environment for clinical placement teaching

Hitherto this thesis has concentrated on the top two thirds of the metrological chain, exploring the context for the more detailed exploration of practice in clinical placements drawing on non-participant and participant observations which now follows. Thus far analysis of documents and retrospective participant observation have been used to shed light on the development of the systems of classification and measurement put in place by the GMC and the medical school, as well as the unintended consequences and resistance to which they gave rise. The focus has been on the formal structures of assessment that have been applied both to the school itself and its students, but the more conventional ethnographic observations in the following chapters explore the educational environment of clinical placements to show first how spaces, impermanence, time, patients and students and staff compose the environment and impinge on behaviour (this chapter), how mediation can be used to understand how sensory and other information is translated into speech (Chapter 9), and the ways in which the 'implicit labour of language' may be used to understand the significance of the forms of speech used in the clinical environment (Chapter 10).

Quoting Merton's definition of socialisation as 'the process by which people selectively acquire the values and attitudes, the interests, skills and knowledge – in short, the culture – current in the groups of which they, or seek to become members', Bloom identified a threefold distinction between what he calls a standard conception of education and socialisation, (Bloom, 1995; Merton, 1957 pp.3-4). First, whereas education's goal is to develop the individual's cognitive and technical competence, socialisation focuses on learning the organised '*behaviour'* required of a professional, second the school is seen as a social environment, a key word here is '*culture'*, and third the socialisation process is more '*developmental*' than direct and as already noted, it refers to 'personal change and growth rather than simple acquisition' (author's stresses) (Bloom, 1995 pp.907-8). Echoing the functionalist distinction between manifest and latent and alluding to Bosk's findings, Bloom reiterates that behaviour 'is formed in the cultural norms of the professional environment' and that bolting on humanities courses or other curriculum revisions will not lead to significant change unless the structure of the educational environment is changed: he says that if students find that values are missing or demeaned there they are unlikely to take them seriously (ibid. p.908)

The first sentence of Hafferty's entry In the 2007 Encyclopaedia of sociology on Medical School Socialisation also harks back to Merton and Becker but says that that 'The study of medical socialisation as a process of professional socialisation is at best a dormant and at worse (sic) a dying object of academic enquiry'; he continues 'The age of large-scale investigations of education on identity and professionalism appeared to be over' and whilst Bloom puts culture in italics he puts it in inverted commas (Hafferty, 2007). Noting the attempts to establish 'core competencies' Hafferty thinks that what he calls the 'social movements' for professionalism, patient safety and EBM have the potential to impact on medical student socialisation but as Bloom implies, he wonders whether education and assessment will seek to change students at the level of identity or simply 'play out at the level of social rhetoric – and thus outside the realm of socialisation' (ibid.).The evidence presented thus far suggests a parallel between the commoditisation of learning and his notion of social rhetoric, and supports Bloom's view that these 'bolt-on' attempts to inculcate the values and attitudes of professionalism may fall outside the realm of socialisation as he defines it, but do have an impact on professional behaviour.

The observations in the following chapters focus on behaviour as Bloom recommended, privileging speech but without ignoring what Bourdieu refers to as hexis (Bloom, 1995; Foucault, 1994; Bourdieu, 1977). They are an attempt to understand how the developmental processes that Bloom sees as characterising socialisation operate (ibid. p.907).

The researcher, the environment and space

All staff on a hospital ward must be bare below the elbow, so on arrival it is always necessary to find a place to put outdoor clothes and bags. The default for the researcher was to use the reception facilities of the medical school, but they are usually some distance from the wards, and in one case at the opposite end of the site, so if it rains you get wet. Visiting doctors have the same problem and in one case it was possible to slipstream their breezy imposition on clerical staff to deposit bags under shelves in offices full of patient files, but where to put outdoor clothes and bags was always a consideration and required prior investigation and arrangement. Students had the same problem, and an induction to one rotation advised them to take their valuables with them and to leave bags and coats in a room in the hospital unit they were attending (HoY3), (see *Impermanence* below).

Ilustration 1 A typical 6 bed ward

Daily Telegraph 5th March 2010

It is a commonplace that hospital wards are busy places, activity is constant with cleaners, auxiliaries, nurses and doctors moving within the ward and in and out of it. A typical ward consists of a series of 6 to 8 units each of which will have adjustable beds with curtains, bedside tables, an armchair and televisions on articulated arms as standard, and depending on the specialism and the patient's condition, different monitors, drips and other equipment. The spaces between the beds allow equipment to be brought to the bedside and for staff to attend to patients, but they are not designed to ensure that groups of students can see what is going on, so at times it feels rather crowded with 6 people around a bed with the curtains drawn, and it's not always easy to see exactly what is happening. The procedures observed did not include what the curriculum refers to as 'intimate examinations' but touch was involved and so close observation was an advantage, but the perspective from the end of the bed was not always ideal, and in some cases there were visual obstructions that caused students and the observer to crane their necks to get a better view. There is however sufficient space at the end of the beds for tutors occasionally to conduct conversations with one or two students at the same time as another is taking a history or conducting a physical examination.

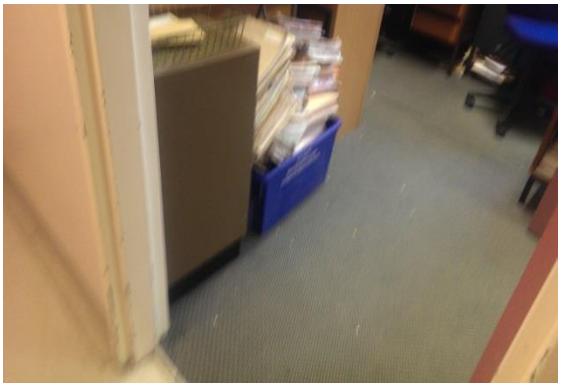
Patients' hospital beds and couches in consultation rooms are adjustable, notably the top end may be raised bringing the patients' head, neck and torso forward to facilitate examination. In hospitals adjustment was made by means of a keypad control for an electric motor and this was often to be found at the end of the bed so another student or the tutor might volunteer or be asked to raise the head of the bed when necessary. Similar adjustments to the patient's body might be achieved through rearranging pillows. Patients' clothing was normally removed or otherwise rearranged to allow students to use their stethoscopes, but also to reveal operative scars and chest expansion, and students might help patients to remove and replace pyjama jackets or other upper clothing, but women were never asked to remove their tops and stethoscopes were applied through their clothing.

The distance between beds and their associated furniture as well as convention perhaps, seems to create enough space for patients not to have to socialise with one another. They were likely to have books, music players and mobile phones to supplement their televisions, and when visiting the wards to get their consent it was noticeable that patients were not talking to each other. The observations took place during the day and few patients were seen watching television on the wards although those in single rooms were more likely to have it on (HnY5). Rice observes that sound plays a key role in patients' lack of privacy and says that the patients he spoke to found electrocardiographs particularly irritating (Rice, 2013 p.39). One teaching session was interrupted by a patient's mobile phone but he made it clear that he was not able to talk, and other patients were observed to be using their phones on some wards, although it was not common (HfY3). When patients were approached for consent they were likely to be sitting in their chairs but never so far from their beds that it was impossible to guess who they were. Most patients were on their beds when the student group came round, and if they were in their armchairs they were asked to lie on their beds to facilitate physical examination.

Lighting in the wards is provided by large windows and baffled fluorescent lights that cast an even, relatively shadowless light and although lights and other equipment are to be found at the bedside, generally they were not used other than once to produce a lateral shadow to show up a jugular vein pulse (jvp). Direct light was used in in the dermatology consultation room but the only other technology commonly deployed was the stethoscope with which every student was equipped (HoY3).

As a rule these 6 bed units give on to a corridor which commonly houses oxygen cylinders on sack-type trolleys and other trolleys designed for cleaning equipment, food, drink and patients' paper files: trolleys also exist for drugs, but unsurprisingly they are not usually parked in the corridors or if they are, are locked. These corridors have notice boards and sometimes a monitor with a keyboard on a standing eye-level shelf that can be used to access x-rays and other patient data. Somewhere in the vicinity, perhaps in a spur off the ward corridor there may be cramped offices for staff working at computers on desks surrounded by piles of the thicker patient files that are not immediately needed on the ward (see Fig. 6)

Illustration 2 Author's snapshot of files in office



The size of corridors in hospitals is dictated by the need to move patients, beds and other equipment without congestion in emergencies, but they are also sites for more or less confidential interaction. Open wards and congested office space means that ward corridors, although ostensibly more 'public' places than the bedside or the ward, are paradoxically suitable for discussing issues that might distress patients, and tutors would use corridors for such discussions as well as for introductory remarks before and summaries after students had seen patients: the networked workstations where records could be accessed occasionally facilitated these conversations too. Although some of these conversations in the ward corridors were static, others on the way from the medical school enclave to the wards were conducted at the relatively swift walking pace common in the wider corridors between the wards, providing a vignette of a nomadic work life (see below).

The contrast between the space and order on wards and in consultation rooms and the lack of space for files, cabinets and spare trollies or indeed staff in hospitals irresistibly invokes the metaphor of front and backstage so effectively used by Goffman, but in this case these spaces are closer to a real backstage with its ropes, tackle and props (Goffman, 1990), (Illustration 2). The clutter of the spur corridors presumably results from a lack of storage space in buildings that have been adapted rather than redesigned to cope with changes in administrative practices as well as treatment. On an induction in new premises for a department of dermatology the tutor was concerned to show students the room, still smelling of fresh paint with its customised shelving to house patient records, although the stacks of records evident in the picture above were still to be seen in offices elsewhere in this department too (HoY3). These teetering stacks of files in Illustration 2 provide a graphic illustration of just one of the advantages of the digitisation of patient records. Records were not generally available to students for teaching sessions and were only referred to as a source in the bedside discussions of ECGs: normally sight, sound and smell rather than writing were the dominant media there, see chapter 9.

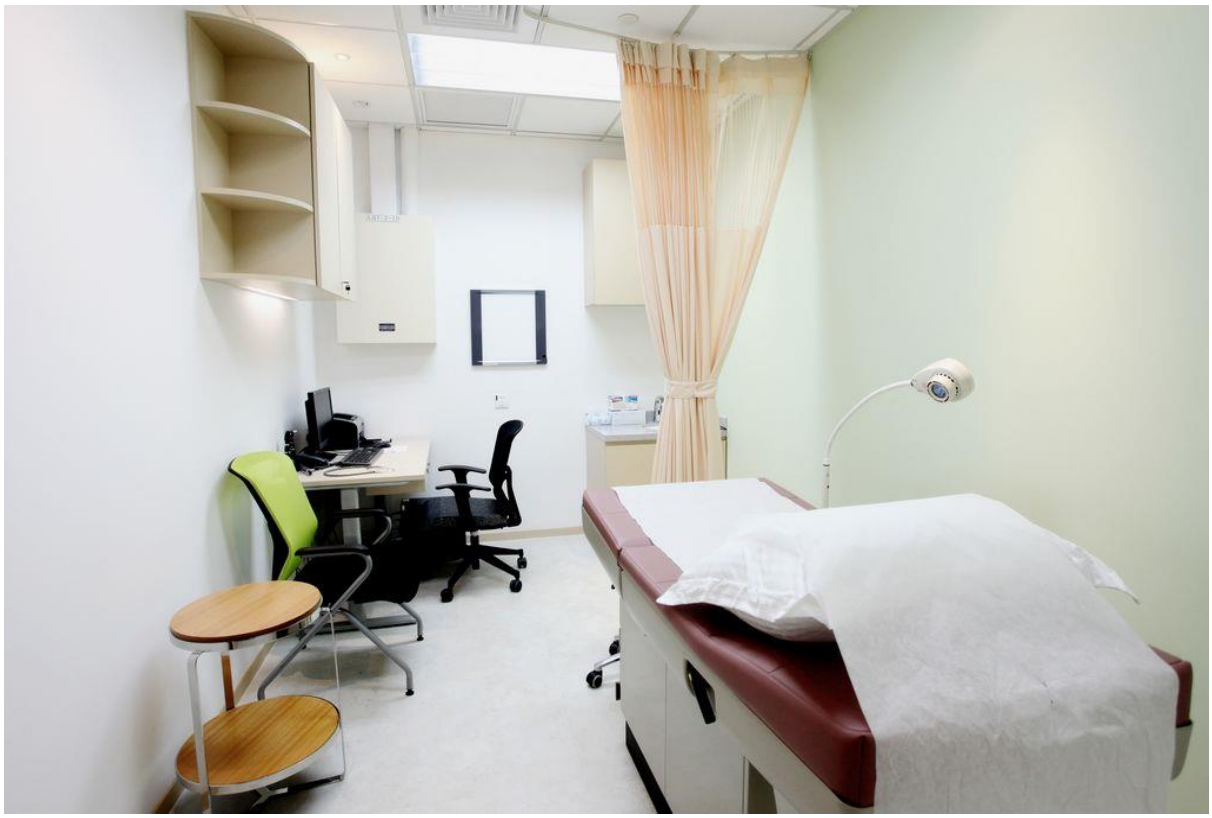
Every ward has a central station, usually in the corridor, with computers and patients' files, generally populated by nursing staff where doctors and other staff may often be found consulting files or using the machines.

Illustration 3 Typical ward central station

Craig Hospital website accessed 03/06/14

If unaccompanied by a doctor the researcher would normally go to the central station to tell a member of the nursing staff why he was there although there were occasions when time constraints meant that he would have to go directly to talk to the patients that had been chosen by the tutor for the teaching session. Unlike everybody else who was not a patient the researcher had no uniform or identity card but was never challenged while waiting in the ward corridor; perhaps the possession of a clipboard conferred legitimacy.

Illustration 4 GP consulting room



http://www.ghcchina.com/facilities/ghc-pudong-center/typical-consultation-room accessed 03/06/14

Wards were only occasionally noisy but never enough to interfere with teaching and learning which was generally although not always, conducted with the curtains drawn round the patient's bed, creating what Mesman refers to as 'an area of attention' (Mesman, 2008 p.1710). Usually patients were either in, on or near their beds and they were asked to lie back on them for physical examination and the use of the stethoscope. Except in slowed sessions, GPs did not use their own rooms for teaching but consultation rooms equipped for group-based clinical placement teaching with a desk, a couch, chairs for 8 people, an inspection lamp and a computer. So the spaces in which teaching took place were predominantly impersonal and more or less public, even in general practice where most GPs' own rooms are likely to have some pictures or other personal touches.

Staff on the wards wear uniforms that signify their status, but doctors and students no longer wear white coats, and are therefore distinguished by their lack. The issue of student dress came up in committees three or four times over a period of 9 years.

Discussion largely centred on what women revealed, e.g. low or high cut tops revealing cleavages or midriffs, or the extent to which faces should be covered when talking to patients and in examinations. I never observed a session where students were without their stethoscope perhaps because with the decline of the white coat, stethoscopes have become even more significant as badges of the future doctor, and are probably the most common present from proud parents, either hung around the neck or protruding from a pocket, and see Rice for a discussion of the agency of stethoscopes indexing medical competence (Rice, 2013 p.72). But students occasionally had to borrow each other's watches to measure pulse rates and another 'badge' was provided by fob watches worn by some students at the waist in an ideal position for the purpose. The other more literal identifiers are the identity cards that have to be visible on NHS premises that were also most often worn at the waist.

Impermanence

The cluttered backstage offices and rooms in hospitals and the need to 'park' personal possessions, served to emphasise the rootless nature of doctors' and students' existence within them. Teaching hospitals have a suite of rooms or 'wing' for the medical school, and GP practices have dedicated seminar rooms and GPs their own rooms, but whilst hospital tutors with significant educational responsibilities may have their own or more often shared offices, most hospital tutors hot desk like everyone else. The education centres in hospitals do not have common rooms and apart from seminar rooms and computer suites, include a room with anatomical models, a hospital bed and the equipment that would normally surround it (excepting the television) and other tools and facilities for the practice of clinical skills and for clinical exams.

The paucity of private space in hospitals in particular and healthcare in general, may be seen as symbolic expression of a presumption of the constant availability of staff as well as patients for and to the practices of medicine. The picture below (Illustration 5) was taken in a doctors' room next to a ward while waiting to go to see a patient and the reason the figure in it is sitting on the windowsill with his pack on the floor is that all the three chairs were already taken and the photographer was perched on a table (HnY5). The room was rectangular with a desk along one of the long walls with two printers, a desktop tower and a monitor, and each of these long walls was glazed. Along one wall which afforded a view of the nurses' office there was another small workstation with a laptop clamped into a frame plus a table and a cabinet for patient files. This space served as a

temporary home for the three fifth year undergraduate students, and a more permanent one for four foundation doctors as well as the doctors on the ward and it was where all their administration was done. While I was there a foundation doctor was drafting discharge forms and nurses and other staff came in and out with patients' files. As the picture shows, files were also stacked on the windowsill in labelled piles. Set into the floor of this room there was a cartoon lion, presumably indicating that this had once been a children's ward; serving to underline the fact that hospital spaces are repurposed.

Illustration 5 Author's snapshot of ward office

Informal conversations with tutors before and after observations sometimes turned to space in the hospital, in one case that the tutor's own specialty had just been deprived of space due to the impending inspection of another service, and in another a consultant offered a description of a new facility paid for by an equipment manufacturer that allowed his specialty access to new, well-furnished and equipped rooms. Indeed when a group was expelled from a patient's room because it was a mealtime, we all walked across the site to this suite of new rooms (HcY3), (HnY5). These conversations and the experience of being on the wards gave a glimpse of an essentially peripatetic style of working when compared with (even open plan) offices.

As discussed in the next section, the school's more or less subtle organisation of the timetable reinforced the message of a nomadic existence and constant availability, as did the students' 6-month rotations between the 5 hospitals. The GMC noted students' reluctance to travel to another university site for SSCs and the amount of travel was a constant source of student discontent (see Chapter 7 *2004-5*). In the first two years students are based on one or other campus and arrange their own accommodation but after that they are provided with hospital accommodation, so although the school encouraged them to maintain a home base, many felt that this was a luxury they literally couldn't afford. The rhythm of the rotations cuts across the academic year that determines the availability of undergraduate student accommodation and thus adds to the sense of dislocation and rootlessness that exists in the spaces and routines of hospital life.

These migrations also disrupt working life because hospital layouts are different from one another so students have to learn where the departments and wards are, and I got a taste of this confusion when trying to find a ward in a large hospital where the designations had been changed and received conflicting information from staff on the ward's whereabouts (HnY5). Students have to cope not just with a different demographic patient mix; but different drugs for the same condition and new protocols, as a consultant explained in her introduction to a new rotation 'We're not conventional here' or different expectations or quasi-norms about students' place in the hierarchy and where they should or should not go; as one student put it 'As a student you're in the way' so she tried to 'look purposive' (HeY3), (IuY4), (Hafferty F, 2009 p.33) (see Chapter 10). Some of the differences may be made explicit in the inductions to each site, but others may be less evident, and this is explicitly acknowledged in the GMC's guidance on medical education that superseded *Tomorrow's Doctors* (GMC, 2015b). Although, as Harris points out regulatory bodies and hospital administrators strive to create a sense of uniformity about medical practice there is a good deal of social labour involved in moving between contexts of practice and adjustment can be stressful and Mort et.al report that even experienced consultants feel their expertise threatened in an unfamiliar operating theatre (Harris, 2011; Smith et al., 2005).

Time and timing

In December 2013 with some trepidation I was preparing to carry out my first observation. The lengthy negotiations about ethics and access had been completed and I had

succeeded in contacting a consultant previously unknown to me with whom I had met and who had agreed that I could come to observe a session with students on the wards. This first observation was to start at 09.00 on the 20th December which meant catching a bus at 06.30 to arrive on time. However on the day before at 17.00 I received an email from the tutor to say that the ward had been closed due to an outbreak of D&V (diarrhoea and vomiting) and that no decision could be made about whether the teaching could go ahead until the morning, probably after my planned time for departure, so I decided to wait until the New Year to begin my observations. This experience chimed with one of the preoccupations of my previous working life at the medical school where I had sought to alleviate students' irritation at turning up on the wards to find that for one reason or another a scheduled session was not going to happen, by setting up a system of texting to tell the groups when teaching had to be cancelled at short notice.

Disruption was more common in hospitals, because whereas teaching and learning in general practice or in the medical school's consultation rooms in the hospital was separated out from the everyday life of the surgery or ward, ward-based teaching has to fit round ward routines. This was illustrated by one session where the tutor and students had mutually agreed to bring it forward (it was a Friday afternoon) but found that patients weren't available because they were having lunch, and another where the group had to leave the patient's room because supper was being served; patients who had agreed to talk to students may be taken off for tests at any time because treatment or feeding trumps teaching (HkY3), (HnY5)

Waterworth refers to duration, tempo and synchronisation in her discussion of time management in nursing and particularly to the 'durational expectancies' that are applied to tasks (Waterworth, 2003 p.43). In the third year, teaching sessions may consist of 'slowed down' clinics where patients are seen by a tutor with students in attendance or where the student may take a role in the examination, or as in all but two of the sessions observed for this study, the only purpose may be to teach: in year 5 GP placements the student does the consultation on her own and the tutor comes in at the end. Whichever they are, 5-7 minutes for history-taking and about the same for a physical examination was the norm in the education context. This may be influenced by the duration of OSLERs, but NHS targets are also often expressed in terms of time and 'breaches' in treatment times, so there is anyway constant background pressure to complete tasks within allotted limits. A Swedish study suggests that 7.5 minutes was not untypical for the time spent with patients on non-teaching ward rounds (Swenne and Skytt, 2014

p.297; Deery, 2008). As Waterworth notes the temporal references ‘determine the knowledge of what is relevant that comes to be incorporated in the professionals’ underpinning practical knowledge that then becomes taken for granted as the way things are’ (Waterworth, 2003 p.52). She also notes the tension between these expectancies and the provision of care.

The 5 year duration of the undergraduate course is one of the factors that sets medical students apart from their undergraduate peers in other disciplines, reinforced by the hours they are expected to work and the fact that they have shorter vacations (Frankenberg, 1992 p.1). Students commented on the pressures of the course and the impossibility of getting through the material, of ‘drinking from a fire hose’, and at the beginning of one third year rotation they explained that they had not received their timetables until the last minute (GPaY1), (HoY3), (HeY3). The beginning of full-time clinical placements in year 3 is when students move from the relatively controlled environment of the university where timetabled sessions generally happen when they are supposed to and warning of any disruption is given, to an environment where timetable disruption (sometimes although not always, due to the exigencies of clinical care) is more common and where it is sometimes quite difficult to warn them of it One observed session had to be reorganised on the spot because students had not apparently received an email specifying what they were supposed to do for it, and on another occasion a tutor was ‘on call’ as a back-up examiner in case an examiner didn’t show up for the year 5 exams, so until the session happened none of the participants were certain whether it would or not (HfY3). Another tutor gave her phone number to a student in the group who was to act as the conduit for information between her and the group because she appreciated that the medical school central administration was at one remove from the tutors and that messages sometimes didn’t make it across the boundaries between the clinical environment and the university (HeY3) (see Chapter 7 for a discussion of the transfer of information).

Doctors’ hours of work have been the issue around which many of the battles over the management of the NHS have been fought but there is no space to rehearse them here except in so far as their approach to time is related to assumptions about professionalism among students. Frankenberg points out that forgoing the privilege of private time is a mark of professionalism (Frankenburg, 1992 p.5). Indeed once arguments about time and the definition of sessions are brought into discussions about contracts they can become the thin end of a wedge that can be used as a management tool, as Starkey put

it ‘Imprecision lies at the very heart of the medical contract’ (Frankenberg, 1992 p.95). During this research the issue of time and its definition led to the first junior doctors’ strike since 1975, and the first ever withdrawal from the provision of emergency cover in April 2016. It was concern about safety that led to the European Working Time Directive (EWTD) which limited the hours junior doctors were officially allowed to work and indeed undergraduate courses are required to demonstrate that they fit within the EWTD limits. Nevertheless medical students are expected to work hard and there is still an expectation that they should gain experience ‘out of hours’ by attending AAU or other clinics or ‘doing nights’ to broaden their experience. In one session a 5th year student recounted her experience of working on a ward at night and as she said, ‘at night people seem to be more ill’ (HnY5). The tutor observed that there were fewer people around, so it tended to be more intense and added that ever since the school’s foundation as the GMC noted, they had been trying to get students to do more nights because it was so useful to them, but that most were reluctant (see chapter 7 *GMC visitors’ annual reports 2003-4*).

Whereas many first year undergraduates in other disciplines want to know how much they are supposed to read, the most common question from first year medics is how much time they are expected to spend on various activities. Attitudes to time, its measurement and its costs may vary between the generations due, among other things to the fact that medical education, simply by virtue of its length is now expensive, and notions of value for money sit somewhat uneasily with ideas about professionalism and indeed care that demand a commitment to completing the job however long it may take (see Chapter 11 *The commodification of learning*).

The different assumptions about time between teachers and taught may be illuminated by two examples from the course timetable, the first in the first year and the second in the clinical placement years. The timetabling of first year PBL sessions carried a very lightly coded message about what the school expected of its students which was noted by the GMC visitors, see chapter 7 *GMC visitors’ annual reports 2003-4*. In the students’ first year the PBL ‘case’ was introduced in a three hour session on a Thursday afternoon and then they were expected to go away, research the case and come back with relevant information to present it in another three hour session first thing on Monday morning. The open-ended nature of PBL, not to mention medicine itself, means that it is very difficult for students to know when enough research has been done and of course roughly two thirds of the time available to do it fell at the weekend. There’s little doubt that most first year students spent most of their weekends working, nor that this timetabling was

intended to dissolve the distinction between work and leisure, and to carry the message that they should accept that they were not like other students and indeed, once qualified they would be unlike other workers.

The second example comes from later on in the course, in the phase 2 and 3 clinical placement years. Students rotate between 5 different hospitals spending roughly half the year in each, so in an effort to maintain a sense of community, as well as a concern to use expertise most efficiently, the school held weekly conference-calls linking the sites for discussions that dealt with each of the body systems, one for musculo-skeletal, one for respiratory etc. The idea was that students should come with examples and questions gleaned from their clerking of patients and that each session would be chaired by a specialist who could respond to the students' experience and queries. There were a number of technical and staffing difficulties that threatened the smooth-running of these sessions, but the most prominent underlying issue was their timing. The course leadership decided that they should happen on a Friday afternoon, and although it was not openly stated in the early days, this was to try to ensure that students were not tempted to extend their weekends into Fridays. Nevertheless attendance, by both staff and students, was and remained an issue. Students complained that tutors often failed to turn up, or about the difficulties of turn-taking in conference calls. Whether made explicit or not, the discussion surrounding this element of the timetable reflected the course team's view that doctors' time was not their own and in some cases the hope that students might spend their weekends in the hospital, contrasting with the younger generation's view that their weekend break was both well-earned and necessary. Being in the hospitals students also picked up that staff do work at a different pace at weekends and that their tutors might stereotypically be found on the golf course on a Friday afternoon: indeed since those timetabling discussions in the medical school, the weekend staffing of hospitals was the issue which led to the series of strikes by junior doctors' in 2016.

Patients' perceptions of time are rather different. One patient from whom I obtained consent but was not in the event seen by students, remarked rather ruefully that he had been in hospital for a fortnight, had little else to do and so would be happy to be examined by students and observed by me, and other patients alluded to the fact that talking to students passed the time, tending to confirm the observation that the layout of the wards and the maintenance of social distance can mean that hospital time passes slowly (HjY3). Swenne and Skytt quote a patient's view of the importance of the ward round, after which

‘there are 23 hours and 55 minutes of dead time until the next round’ so one might infer that for some although certainly not all patients, seeing students provided a welcome diversion from the monotony of life on the ward. But Rice recounts that some much visited ‘celebrity’ patients with characteristic heart murmurs felt ‘objectified’ (Swenne and Skytt, 2014 p.161; Rice, 2013 pp.130,161). Frankenberg opens his edited collection by drawing attention to such things as waiting rooms and the temporal dimensions of treatment, suggesting that medicine may be seen as a waiting culture (Frankenberg, 1992 p.1). Certainly waiting time and ‘breaches’ have become one of the most significant metrics in political, managerial and popular discussions about the performance of the health services, and in the environments of healthcare waiting is without doubt one of the most common patient experiences, exploited by private healthcare insurance providers. In hospital, patients’ time is not their own, their constant availability is assumed, as is their compliance with the schedules and routines of life on the wards: it is an aspect of their loss of privacy and indeed of sickness itself.

If they consent to collaborate in teaching, patients are likely to be occupied for 45 minutes to an hour to allow a history or histories to be taken and physical examinations to be practiced by a group of 4 students plus any discussion and supplementary questions or input from the tutor, but they are not expected to and usually don’t ask any questions. Hospital hierarchies determine whose time is valued and hence how communication between various actors is structured, and time may be seen following Frankenberg, as significant within what he calls the ‘symbolic performance of sickness’ (Frankenberg, 1992 p.3). The summaries that students have to give to doctors are predicated on the assumption that they are speaking to a busy, therefore time-poor, and implicitly irascible consultant who will interrogate what they say and how they say it and probably ask for information they don’t have: brevity, density and accuracy are of the essence, (see Chapter 10).These interactions are indicators of the value of different actors’ time, roughly in line with the per capita cost of the grades in the hospital. It may be worth restating the obvious; that the time for consultations is a reflection of the worth of the doctor’s time, not the patient’s, as Frankenberg put it ‘We love our physicians because they share their time with us; we hate them because they incorporate it into their own.’ (Hafler et al., 2011; Frankenburg, 1992 p.viii).

Patients' characteristics

In primary care tutors tended to choose patients they knew well who exhibited appropriate clinical signs and were able to provide a good history for teaching sessions, but of course in hospitals the choice of patients was dictated by who was on the ward, although the age range was similar. Experienced patients 'know what not to say' as one clinician put it, Atkinson says they 'put the clock back' i.e. they don't give the game away to students (HcY3), (Atkinson, 1981 p.44). It was noticeable that even in hospital, patients became practised at presenting their cases, one patient who was observed twice with a week's gap between observations was easier with the process the second time and noticeably more fluent in his description of the events that led to his admission although Atkinson notes that patients' accounts sometimes changed or cut corners and could be at odds with what informed the original diagnosis (HjY3), (HkY3), (Atkinson, 1981 p.47). If a patient is amenable and has 'good signs' tutors will be tempted to use them when they can. One out-patient with visible chest scars who had been used for a tutorial in year 3 was observed 6 months later, waiting to be a 'case' in final exams, an example perhaps of some 'professionalisation' of patients (HaY3). Nonetheless there were occasions when hospital patients turned out to be 'a bit grumpy' as a tutor put it and monosyllabic despite having given their consent (HbY3). In general although one patient talked about his depression after an operation for a valve-replacement, and a GP made an explicit link between chronic disease and depression, most evinced no symptoms of depression despite what were in many cases life-threatening conditions, so students did not generally have to cope with the difficulties in communication that depression might throw up (GPbY3). However on the wards a thick Glaswegian accent offered a challenge in one session and a mask inhibited a patient's responses in another, elsewhere a simulation deliberately constructed an emergency scenario where the patient could not communicate, and another tutor used an inability to communicate in a thought experiment analysis of what to do in A&E (HhY3), (HnY5), (HlY3), (see Chapter 10 *Hot medicine*).

Out of the 8 rotation blocks that structure the curriculum one is for women's health, one for child health and another covers the central nervous system, special senses and elderly person's medicine. In the observations, with the exception of the out-patient clinic, the primary care slowed sessions and the 5th year clinic, the patients chosen for teaching of whom 31 were male and 21 female generally had chronic conditions, and were usually in their sixties or older and without exception white, and presumably due to their relatively

ready availability this was the normal age for patients asked to come in for teaching in general practice. *Tomorrow's Doctors* states that 'students should have acquired respect for patients and colleagues that encompasses, without prejudice, diversity of background and opportunity, language, culture and way of life' (General Medical, 1993) The submission for the school refers to 'poor health status associated with urban deprivation', but it was the relative lack of diversity on the school's patch that concerned the GMC visiting panel, and there were discussions with the course team about how students might be exposed to different cultural assumptions and the difficulties of using interpreters (School, 2000).

No observations were made in the women's or child health block but there were examples of the medical consequences of culture and race. In an outpatient clinic there was some discussion with the student about a pharmacist patient who had previously questioned the choice of a drug because capsules might have gelatine with pork fat in them (HoY3). The tutor in a respiratory session cited the low incidence of TB despite the indicators for poverty and other risk groups and drew out the relatively small Asian population in the catchment area (HcY3). Students' consultation records of the patients they see on their own apart from taught sessions, ask them to specify under 'Issues' 'Ethics/Disability/Ethnicity/Other' as well as noting age (Phase 2 Handbook 20013-14 p.62). But Verdonk suggests that gender issues, such as the differences in coronary heart disease have not found their way into the medical curriculum, and Dogra that although 'some progress' has been made in the UK and Ireland in the teaching of diversity in medical schools, it compares unfavourably with the United states. It is difficult to pass judgment on this school's approach to gender or race on the basis of the available evidence but the most salient characteristic of patients, especially those in hospital was their age (Verdonk et al., 2009; Dogra et al., 2005). When students were sitting in on an extended clinic or were 5th years running their own clinic in general practice there was a broader age range although still little diversity.

When patients were seen by students in the context of a particular rotation and chosen to exemplify heart failure, respiratory symptoms or 'interesting murmurs' etc., students would naturally tend to concentrate on those appropriate outcomes, but there were often other considerations to complicate the picture. When students concentrated too hard on their auscultation, percussion and other techniques to the exclusion of the patients' presenting or more immediate concerns a tutor did prompt them to explore the presenting complaint (HaY3).

Although there is a tension between the curriculum that specifies a patient with condition 'x' and the realities of patients' illnesses and lives, one of the purposes of seeing some patients was because, as one doctor put it 'The patients haven't read the textbook' i.e. in principle their signs are not necessarily all classic and so again in principle, they can disrupt the tendency to focus solely on the system-based block objectives (HcY3), (HaY3). Although the students expected to see and were listening to a patient with asthma or a tissue valve replacement so that they could begin to distinguish chest and heart sounds, most of the patients in their sixties came with a cluster of problems and treatments that could interfere with both diagnosis and treatment. This served to reinforce the point that observation is central to the process, as one clinician emphasised several times and a student reported they were often told 'say what you see' (HaY3), (IuY4). However students often said what they were expected to see or thought they were expected to hear, and had to be reminded to look to free themselves from presuppositions derived from the curriculum, textbooks, course handbooks or other extraneous sources

Students and staff

The school Code of Practice on admissions section 2 is devoted to '*Equal Opportunities and widening Participation'* which is congruent with the universities' commitments to a programme of widening participation that takes account of educational disadvantage and it states that in line with legislation 'no discrimination will be made on grounds of race, religion or gender'. In section 6 *Selection* it says the school 'welcomes applications from mature students'.

79% of the first cohort were school leavers and 21% over 21 but the available reports to the GMC did not thereafter tabulate students' ages. In that 2003 cohort women made up 64% of the total intake and thereafter the ratio of women to men fluctuated between the low fifties and low sixties in percentage terms. The first cohort had the highest proportion of white students at 79%, and until the course was running in steady state in 2008 the percentage varied between 60 and 70 percent; Asian students varied between 15 and 21% and black students between one and 5 percent, seeming to stabilise around the latter figure.

In the observations no assumptions were made about students' ethnicity or age and 19 students were male and 36 female .Of the sessions observed five were tutored by female

and fourteen by male doctors and their years since qualification varied between 42 and 14 with an average of 32 years.

Summary

This chapter began with a discussion of Bloom's distinction between education and socialisation which concludes that a focus on cognitive and technical competence including what Hafferty calls 'the social movements' for professionalism and EBM do not constitute socialisation in Bloom's terms, and then described the physical environment of clinical placement teaching and the impermanence of hospital environments and explored how time impinges on practice. It has considered the consequences of rotations as well as the deliberate construction of timetabling designed to accustom students to the demands of professional life and the student and patient mix. It suggests that these factors do contribute to the environment for socialisation in Bloom's sense and they also provide a context for the exploration of the concepts and data drawn from the observations of teaching in clinical placements and retrospective participant observation that now follow in chapters 9 and 10.

These chapters will focus on practice as a way of exploring behaviour to go beyond the notion of culture and cultural norms, and as a key to the analysis of the professional environment, as well as to locate what Bloom refers to as 'personal change and growth' within the community of practice and learning (Prentice, 2013; Bloom, 1995 p.907).

9. Practice, mediation uncertainty and the gaze

> **'But to look in order to know, to show in order to teach, is not this a form of tacit violence, all the more abusive for its silence, upon a sick body that demands to be comforted, not displayed? Can pain be a spectacle? Not only can it be, but it must be … Since disease can be cured only if others intervene with their knowledge, their resources, their pity, since a patient can be cured only in society, it is just that the illnesses of some should be transformed into the experience of others…' (Foucault, 1994 p.84).**

The next two chapters present observations of clinical placements at GPs' surgeries, on hospital wards and in seminar rooms. They focus on specific practices, what tutors and students do, and what they say while doing it, Savage's 'mundane descriptions, evoking ordinary transactions', or in Latour's terms, how the world of medicine is composed (Prentice, 2013 p.135; Savage, 2010 p.171; Latour, 2005 p.207). They explore how students 'think with eyes and hands' and are encouraged to respond in the process of learning to be 'affected by hitherto unregistrable differences' such as the distinctions between heart murmurs or the textures of x-ray images (Latour, 2004 p.209; Latour, 1985 p.1).

Bourdieu tells us that the objects of knowledge are constructed and that the principle of this construction is practical activity oriented towards practical functions, Rose argued that the history of truth is a matter of practices and exhorts us to look at the 'mundane material practices of looking, seeing, experimenting, calculating measuring and writing' (Rose, 1990 p.59; Bourdieu, 1977 p.96). Foucault saw that the experience at the bedside of patients had always been central to medical understanding and learning, but that what changed at the end of the C18th was the way in which that experience was articulated into analytic categories. An epistemic shift gave rise to a new clinic that provided a form of truth that was uncovered by the gaze, it became centered on the individual and manifested in everyday practice, where teaching and saying became a way of learning and seeing; although others have implicated this notion of the gaze in the process of dehumanisation of and detachment from the patient (Holmes and Ponte, 2011 p.107; Davenport, 2000 p.311; Foucault, 1994 pp.68,70,64). This chapter is concerned with

how in clinical placement teaching, tutors show in order to teach, and students look in order to know, with how illness is presented and mediated so that it can be transformed into ‘the experience of others’.

Mediation: sight, sound, touch and pain

The ‘fine sensibility’ to which Foucault refers must distinguish gradations of colour and tone through direct visual observation and although he accepts that the gaze contains ‘different sensorial fields’, clinical perception ‘remains under the dominant signs of the visible’ (Foucault, 1994 pp.121,165). Because sight is shared and public, it is relatively although far from completely straightforward to connect and designate visual phenomena by pointing and labelling them, but other senses are more difficult to share, more private, and students have to learn to listen and to feel and then to translate body sounds, textures and temperatures as well as patients’ feelings into reliably communicable forms. The privileging of sight in the metaphors for understanding such as ‘I see’, should not blind us to ‘seeing’ that all senses including sight, are not intermediaries, but mediators, and that the translations from sense data to speech and back modify the information that is transmitted (Latour, 2005 p.34).

For physical examinations the advice to students was that the patient should be made comfortable and that care should be taken so that they did not feel too exposed, but that in cardiac and respiratory cases for example the whole chest had to be visible (HfY3). After observing any equipment, students should check for the marks of surgery and observe the temperature of the patient’s hands, their colour, whether there is any clubbing or signs of splinters, nicotine or tar. On the thorax observe the apex beat and any visible deformities to the chest wall. Then feel for the rate and rhythm of radial and brachial pulses and whether arteries were hard. Check for pulsation in the neck or face as well as on dental hygiene and then auscultate with the patient moving and holding their breath, listening for the radiation of murmurs and lung sounds before moving on to check the abdomen. Nothing will give you a single answer but as one tutor said, ‘if you can master the basics of physical examination, it counts for a lot’ (HfY3).

In the teaching situation scars, pallor, or wheezes and students’ summaries of patients’ history can be compared with what the whole group has heard or seen, but even some visual signs were difficult for students to discern. Away from patients tutors might use images to illustrate patients’ conditions, but the images themselves needed to be

deciphered. A student asked to analyse an x-ray said ‘I’m not sure how to describe it’ but once in front of a lung x-ray students could point to zones so that they could be identified and described, and here the tutor used the term ‘millet’ to refer to a particular visible pattern (HcY3). In a nuclear medicine department the tutor used paper cardiograms matched with gamma scanner images to illustrate ‘holes’ for the definition of a heart condition, see figures 6 and 7, (HeY3), These were examples of using atlases to triangulate and identify meaning and to establish equivalence, illuminating the body’s dark interior, but deciphering them was far from straightforward (Holmes and Ponte, 2011 p.175; Foucault, 1994 p.163). At the bedside in the case of the jugular vein pulse (jvp), students have to ask the patient to turn their head sideways and then they squint along the line of the body which at this stage is usually propped by the bed at a 45 degree angle, and they often have to press down on the liver to make it more visible, so it frequently looked like an awkward manoeuvre and indeed did not always produce a clear sighting. Here the effort of seeing was expressed through their posture and sight lines; one student who reported that he couldn’t find a pulse was told jokingly, ‘Don’t alarm the patient’ but finding the pulse, especially an ankle pulse or jvp wasn’t always easy (HcY3), (GPbY3). (Rice, 2010 p.S54)

Ilustration 6 Cardiogram

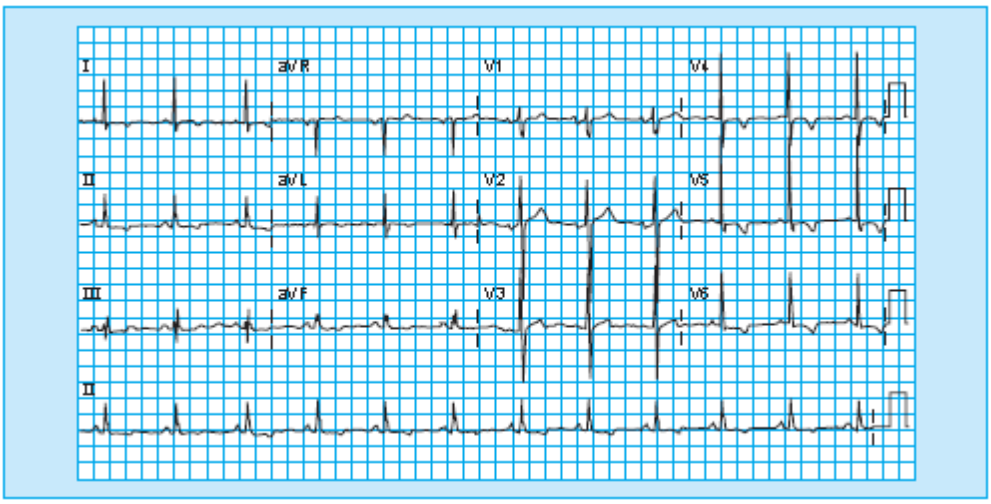
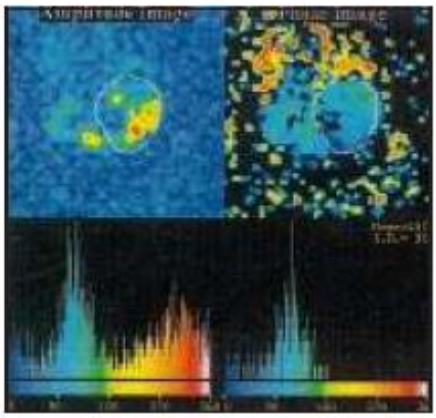


Illustration 7 Scanner image of the heart



Images from The ABC of Heart failure

Hearing presents more obvious difficulties, as Rice notes auscultation is done in isolation (Rice, 2010 p.S52). Most year 3 students 'weren't sure' they were hearing heart murmurs although the patient had been chosen to exemplify them, and when directly asked after summarising a respiratory case, whether he had heard crackles the student responded 'Not that I heard' (HaY3), (HcY3). Another said she could hear the lung 'as if air can't get through', but was unable to elaborate, imitate or label the sound she had heard in any other way (HcY3). Tutors used a number of means to convey and clarify sound; hand gestures accompanied by 'swoosh' sounds to convey the opening of heart valves and crackles and wheezes for respiration (HaY3). Using a stethoscope, students' attempts to concentrate were often signified by an unfocussed gaze, followed by the admission that they weren't sure what they had heard. Rice describes students screwing up their

eyes to concentrate, calling it a ‘performance of listening’ designed to demonstrate they were at least trying hard (HaY3), (Rice, 2010 p.S49). Harris and Flynn say that ‘little is known about how physical examination skills are and have been learned’ and acknowledge the difficulty of articulating ‘subjective’ skills, deploying the notion of attentiveness taken from science and technology studies to explore how medical students learn to distinguish lung sounds (Harris et al., 2015). They noticed that students who had some form of musical training found it easier to describe sounds, because they had learned how to ‘tune in’ as Van Drie describes it, and they identify active listening that focuses on frequency and intensity: they suggest that more attention be paid to the sensory details of learning (Harris et al., 2015; Van Drie, 2013 p.166).

As Foucault says it is language that has to make the invisible clinically useful, but in the observations made in year 3 there was little evidence of a developed vocabulary such as is used in wine-tasting or indeed by Latour’s perfumiers. An example of Schön’s generative metaphor occurred In a physical examination in general practice where students were only able to recognise the ‘cogwheel effect’ characteristic of joints in Parkinson’s disease once it had been described to them as such (Schon, 1983b p.185), (GPaY1). Literally ‘in other words’, students learn to give both the patient’s and their own bodily sensations what Gardner and Williams refer to as a ‘discursive existence’ which translates them through utterances and helps students to identify, articulate and remember characteristic symptoms (Gardner and Williams, 2015 p.776). The third year students did not reveal knowledge of the lexicon for describing the sounds characteristic of particular heart or lung conditions defined in terms of anatomical cause.

Patients’ pain and other internal sensations can generally only be explored through language, sometimes facilitated through palpation or the use of instruments, so it is important to work with patients to yield descriptions that identify the site of pain, its intensity and nature. A hospital tutor spoke of what he termed the ‘minefield’ of chest pain common to a number of specialist areas. Its cause has to be traced by careful questioning about onset, whether sudden or gradual, its duration, rhythm and the symptoms associated with it, grey colour or pallor, whether the pain is radiating, caused by exertion or eased by sitting (HfY3). Just as anatomy differs between patients, patients’ willingness and ability to communicate is a crucial variable which has to be negotiated and manipulated to provide preferably scalable information that can be assembled to turn symptoms into signs. Tutors stress that pain must be described as accurately as possible and patients encouraged to provide a useful description. If it is associated with

the heart for example it must be distinguishable from musculoskeletal pain. It may be radiating and if it is sharp, does that mean like a knife or does it refer to strength or duration (HfY3)? As one tutor said everyone has palpitations so it is necessary to ask about their onset and duration if their significance is to be properly assessed; similarly irregular heartbeat should be defined by tapping out the rhythm so that doctor and patient share the same perception (HfY3). Patients' recall of pain can be refined through questioning so students were told of the need to gauge a patient's capacity to understand and to build a suitable vocabulary for describing pain and other sensations (GPdY5).

Patients' descriptive repertoires were noticeable in their accounts of the onset of conditions, as one describing a stroke said of his wife and himself 'We didn't think it was a stroke – it wasn't like on TV', and described his leg as feeling 'empty' (GPaY1). However as the tutor stressed some patients exaggerate and others tend to minimise so that probing questions such as 'What has changed?' are useful. He referred to the dangers of leading questions (also emphasised in the communication sessions in clinical skills) and said that students should resist the temptation to fill in gaps by providing alternatives by saying 'or…', so that information can emerge and not be prompted and conceivably thereby distorted: an example perhaps of the restraint of the clinical gaze (GPaY1). In both the first and final years students were reminded that when they ask patients to do things they should be careful to use considered language to ensure appropriate action – 'push' or 'pull' rather than 'flex' or 'extend' for example (GPaY1), (HnY5).

Patients may be more or less articulate, sometimes due to their condition or the treatment for it. One patient wearing an oxygen mask was almost impossible to understand, but since the purpose of the session was a neurological examination it was not an insuperable problem because she could register sensation by raising her hand (HnY5). There may be an understandable reticence on the part of students to press a patient who is having difficulty breathing for more detail about her condition when it is evident that any attempt to speak is itself distressing, and one student noted wryly that patients became distinctly less chatty when the possibility of a rectal examination was mentioned (HcY3), (GPdY5). There were examples of patients who become practised at telling their story and who know not to give the game away by volunteering diagnostically critical information instead of waiting until they are asked the right question, although one patient was admonished by a tutor for 'cheating' (HfY3), (HhY3), (HlY3). Patients also take trouble to get it right, one GP patient had done his homework the night before and

produced diary notes to which he referred in order to give an accurate chronology of his admissions to hospital and other details of his treatment (GPbY3). Patients tended to stick to the physical illness script and only mention what might be significant information such as the onset of depression, under particular circumstances (HgY3).

Patients were generally clear about the presence or absence of physical symptoms, particularly when the description offered didn't match their recall: they know if they were nauseous or if they had chest pain even if they need prompting to elucidate its nature. They also tended to offer considerable detail about where they were or what they were doing, whether at work or at home, on a roof, moving from one place to another, where they sat when overcome with dizziness and who helped them, most of which was explicitly dismissed by one tutor as irrelevant (HjY3). The purpose of the medical history is generally less concerned with these contextual details than with categories, aiming for some commensurability that helps push symptoms along a continuum towards the supposedly more reliable realm of signs, from illness to disease.

Students are taught a number of strategies to limit patients' potential for exaggeration and to refine their accounts, by asking them to rate pain on a scale or exploring the sensations of a stroke such as an 'empty leg' or about the degree of limb control. Tutors alert them to the shifts in register between patient and peer or professional communication and tell them they should try to probe what cardiology patients mean when they say such things as 'collapse' instead of 'fall' (GPaY1), (HnY5), (HmY3). After one consultation a tutor drew attention to the dismissive tone used by a patient to describe one of the drugs he had taken as an example to encourage students to pay close attention not just to what their patients tell them but how they do so (GPbY3). At the same time students have to make judgements about relevance, to sift information and to stay in control of a conversation which has the potential to be derailed by digression, or vitiated by embarrassment or unreliable witness. Students have to learn to press patients for information that may be hedged by all sorts of taboos that often apply to unexpected areas. The phrase 'have you moved your bowels?' seems to be generally understood by patients and did not cause any visible embarrassment, but in the third year questions about food or alcohol intakes or smoking were rarely explored as assiduously as students' attempts to identify the nature or intensity of pain.

The patients that undergraduate students saw were willing volunteers so might be expected to be compliant, and they responded to the questions they were asked without

undue digression. There was only one example of a rather garrulous patient, but that was in a consultation taken by a GP who controlled the conversation through mild banter and repartee (GPbY3). Students do speak to patients on their own when they clerk them, but here too patients have to give their consent and are likely to be compliant, so students are most likely to encounter 'difficult' patients if they attend A&E or the AAU or on mental health rotations, which may partly account for the relative unpopularity of these environments, as well as their use as thought experiments to be 'talked through' in teaching. Students only encountered real difficulty in the A&E simulation (see below in chapter 10 '*Hot medicine'*) where the 'patient' only groaned, or when working with simulated patients (HlY3).

The limits of commensurability are explored in a review of Bourke's *The Story of Pain* by Francis who refers to the criteria he was taught as a medical student: severity, character, radiation, timing, onset, associated activity, exacerbating factors, relieving factors and associated symptoms, but he cautions against an obsession with descriptions of pain because he says, the link between pain and disease is not direct (Francis, 2014). Such caution is less relevant in the context of a rotation where the patient has been chosen to illustrate a particular condition, but the fledgling doctor has to come to recognise the indeterminacy of seemingly precise descriptions beyond the limits of the curriculum in the more uncertain settings of an acute admissions unit or in accident and emergency, or indeed an exam, (see Chapter 10 '*Hot' Medicine*).

Induced sensations play a part in physical examination so it's important that students learn such things as how to manipulate patients and their limbs, and how much pressure or force to apply. As one clinician put it, in an twist on Foucault's account of the clinical gaze and its comparison between bodies, we have two limbs so that doctors can compare them for muscle tone, power, wasting, deformities or scars, and in neurological examinations the differences in the sensations produced by stroking with cotton wool, blunt or sharp objects or the reflexes are an essential part of the doctor's assessment of the patient (Foucault, 1994 p.120), (GPaY1). Therefore students need to be sure that they apply equivalent pressure and that they do not hurt the patient so they should try the tests out on themselves and their peers and employ strategies for locating the precise sites by feeling where to tap to assess reflexes and for observing muscular responses. As a hospital tutor advised a 5th year group, the tendon hammer should not be treated as a hammer, 'it should be used like a pendulum, allowed to fall, and it helps to ask the patient to grit their teeth at the same time as testing reflexes' (HnY5). These

‘experimental’ hybrid forms of examination that combine intervention and observation with reliance on patients’ reports of their sensations ideally should not follow predictable patterns, so patients can’t guess where the next touch will be, but students did tend to follow sequences for such tests simply because it helped them to remember each stage of the process.

The medical gaze renders visible what others cannot see but looking, describing and taking a history are transparent in the community of practice in ways that hearing and touch are not. The relative interpersonal inaccessibility of these latter senses makes it easier to understand them as mediators, but the transparency of the gaze is so deeply embedded in our understanding that it is more difficult to grasp that it too is a mediator, that students have to be trained to observe then to compare, to control and account for the differences in their own and patients’ bodies. The comparison between the public forms of saying and seeing and the private more isolated senses of hearing and touch draw attention to the fact that lines of inference to which Schön refers are rendered more tenuous by the differential degree of support that the community of practice is able to offer in the use of the different senses in the clinical environment.

Articulating observation and patients’ accounts

Foucault says the doctor’s task is to ‘give speech to’ what others may see but don’t recognise, such as the nuances conveyed by the different sounds of breathing or the shades of cyanosis, so students have to be ‘initiated into true speech’ (Foucault, 1994 p.115). Atkinson thought that much clinical teaching and the relationship with patients had been ignored in previous work, and that ‘it is vital for sociologists of medical work to recognise its production in spoken performance’ (Atkinson, 1997 p.11; Atkinson, 1992 p.470). Learning to practice is inextricably bound with speech which must reflect what the student sees, feels or hears, and the student’s articulation of what she gleans from patients through her senses is fundamental to her observation and understanding. If students cannot express what they see or hear, the shades of colour or the particularities of sound then it’s very likely that they have not yet been able to distinguish between them, but it’s absolutely certain that they won’t be able to pass a clinical examination which is conducted entirely in speech. Once they can actually hear a heart murmur they have to link it to a physiological mechanism, ‘ejection-systolic’ or other, maybe with an atlas in mind so that articulation signifies not just discrimination leading to correct, refined

identification but the ability to bring it together with a broader picture: i.e. ‘sensorial triangulation’ (Foucault, 1994 p.163; Prentice, 2013).

Although history-taking itself is conducted through speech, if students are to produce ‘true speech’ or at any rate approved speech, the object is to focus the interaction through appropriate questions and to distil or translate relevant information into a concise summary. As already noted tutors warned that family history and what was called ‘lifestyle stuff’ tend to be vague, although genetic information might be useful and students should look out for other clues. One hospital patient, whose admitted alcohol intake was considerable was asked about diet and replied ‘I like my food’, but no further probing took place and the tutor later found it necessary to describe Glaswegian drinking habits as background to a patient’s account of his lifestyle (HkY3). The tutor also recounted meeting a cardiac patient claiming to have a healthy diet who, on receipt of his lunch applied butter and salt liberally to his baked potato, and at another time noted that farmers were probably the least likely to come into hospital or no good reason since they rarely had anyone who could take over (HkY3). On the other hand, hearing various quite elderly patients’ responses to questions about their parents, a tutor made the point that the information was rather vague and that treatment regimes had changed quite a bit in the half-century since, making any deductions from family histories perilous (HjY3).

Some patients’ accounts emphasised the problems their narratives posed; tales of dipping in and out of consciousness before admission and long periods unaccounted for (HjY3). One GP tutor rather heretically suggested that questions about lifestyle might be helpful in allowing students a ‘thinking space’ where they could be working out what to ask next, whilst yet another in an out-patient clinic pointed out that questions about hobbies as well as work could provide relevant clues (GPaY1), (HoY3). Holmes and Ponte suggest that limiting reference to the patient’s background helps to define their suffering as primarily biomedical in nature, steering away from political, moral or social issues (Holmes and Ponte, 2011 p.182). The relevance of ‘lifestyle’ broadly understood may be situationally defined, but as far as the students were concerned questions about it would be expected by examiners as part of a proper history, so whatever their clinical utility they would continue to ask them thereby perhaps embedding a concern with or at least an understanding of, the social correlates of health.

The student’s summary should become a form of distillation and translation that doesn’t merely summarise but defines and mediates the patient’s condition and ‘bounds’ the

problem to make it less uncertain, more manageable (Berg, 1998; Holmes and Ponte, 2011). But year 3 students more often gave a chronologically ordered account of the history or the physical examination they had just done and found it difficult to select and reorder the information they had gleaned, and even a year 5 student's first response to the tutor's question 'How do you think you did?' was 'I covered pretty much everything' (HnY5). As with the conduct of the history-taking or physical examinations, students' overriding concern was not to forget anything, and a fixed chronological order was the best way of remembering. There was a tension manifested in students' hesitancy between the form of a summary where brevity is a cardinal virtue, and conveying a true representation of what they had seen.

Students want to hold on to the history but, as Frankenberg points out a history is not merely listened to, it is 'taken' to be transformed into diagnosis. In this sense the patient's history no longer belongs to her so, together with other aspects of medicine it is one of the ways in which 'medicine creates its other and makes its object' (Frankenberg, 1992 p.17). Thus the doctor transforms the past by re-presenting and re-purposing it in order to create a diagnosis that will determine the patient's future.

Restraint and uncertainty

The majority of teaching sessions included some reference to students' performance of the skills required in clinical exams and how they should approach them. A GP's reasoning about whether to carry out examinations with the patient standing, sitting or prone on a couch was qualified by the coda that students ought to check with the clinical skills facilitators who would know the 'approved' method that would be expected in exams, guidance that might be somewhat tempered by the remark made by another that examiners themselves might not be certain about a particular diagnosis or appropriate treatment (GPaY1), (GPbY3). In general tutors had clear views on clinical matters but recognised that practice might differ between individuals and institutions, and suggested students should check whether there was a school 'approved' way of undertaking a particular procedure that should be used in exams.

Tutors themselves also questioned clinical signs, one warning about what he termed the 'rubbish' clinical signs of heart failure and another questioning whether finger clubbing was a reliable clinical sign in diagnosing respiratory disease although he noted that 'the school seems keen on it' (HiY3), (HcY3). Some tutors stressed their independence;

referring to a diuretic drug the tutor in the outpatient clinic said ‘The books say…. but we find here’, reflecting the fact that both hospitals and specialists tend to use particular drugs, echoing Atkinson’s account of how clinicians set their individual experience against textbooks (HoY3), (Atkinson, 1992 p.458).

As Lemp and Seale report some tutors were at pains to stress their independence from the medical school and its curriculum (Lempp and Seale, 2004 p.771). In her introduction to a new rotation a tutor told students that the teaching they were going to receive might not relate to what they had been told or had heard, and that it would be delivered in three week blocks devoted to particular specialities, further that her particular speciality was ‘not the same’ as the others (HeY3). In the same unit a technician, after asking whether the students had practiced with ECGs before explained ‘We’re not conventional here’ (HeY3). A GP said he thought that the medical school largely left tutors to teach as they chose, but also expressed the hope that the changes to the curriculum that were pending would not change the content too much (GPbY3).

Whilst taking histories or conducting physical examinations students are urged to keep an open mind, and to be simultaneously considering alternative questions or examinations and differential diagnoses, in effect prolonging uncertainty in the interests of considered judgement, and tutors would press them to justify why they opted for a particular diagnosis, offering alternative explanations for the symptoms they reported (HfY3), (HsY3). One GP told a third year group not to be afraid even as students, to question diagnoses (GPbY3). The ‘restraint of clinical discourse’ lies behind many of the strategies used to teach medical students, and exists in tension with the constant time pressure that is now such a prominent feature of the clinical environment (Foucault, 1994 p.xix).

Fox’s seminal paper on students’ uncertainty in medical education that she saw as due to the state of contemporary medicine and the limits of their own knowledge has set a framework for subsequent consideration of the uncertainties faced by doctors and students, although Atkinson argues that the suggestion that uncertainty is a pervasive feature in medicine or medical education is ‘an unwarranted form of sociological reductionism’ (Atkinson, 1995 p.114; Fox, 1957). The observations reported here revealed other sources of uncertainty due to diversity in practice or quasi-norms, delivery and organisation, particularly discontinuities between practice in the clinical environment and in the curriculum and assessment (Bosk, 2003), (and see chapter 7).

As Fox notes, when students go into the clinical environment full-time they look back wistfully on the ‘comparative organisation and security of the academic classroom’, and their uncertainty is more common in handling the ‘emotional and environmental components’ of patients’ disorders (Fox, 1957 pp.233,220). The observations reported here show that they also learn that doctors’ opinions differ and that there’s more than one way to conduct an examination. These differences in practice come on top of the uncertainties caused by students’ difficulties in knowing precisely what it is they are looking at, and most noticeably what they can hear or feel. Nevertheless although students may be encouraged to suspend judgment in the clinical environment, once they have reached conclusions, they are advised to present them with a confidence that they may not feel (see chapter 10).

Apart from Fox the literature identifies research-based uncertainty derived from EBM and suggests new doctors’ judgement continues to be susceptible to the influence of superiors and that they learned not to blame themselves for clinical mistakes (Bosk, 2003; Timmermans and Alison, 2001). The observations identified uncertainties that spring from the variety of clinical opinion and scepticism about the curriculum itself as well as students’ abilities to manage the mediations between their and the patient’s senses and their expression. Students’ exposure to different opinions is due to a curriculum integrated around body systems that requires a variety of tutors to deliver it and this de-personalisation facilitates decentering the student to allow a community of practice perspective that avoids the reification of uncertainty and control and its attribution to the individual (Timmermans and Alison, 2001).

The gaze: seeing and saying

The efficacy and superiority or as Foucault might say sovereignty, of the unassisted gaze was reinforced when tutors, who neither used nor demonstrated physical clinical skills with patients but ‘merely’ looked, drew students’ attention to signs that they had missed (HcY3), (HgY3). The tutor who said he had read the notes did so to reinforce a point, but generally clinicians’ abilities to summarise a patient’s condition through sight and occasionally hearing alone, and the ‘end of the bed test’ provided models for the virtues of the sagacity, attention, precision, skill and patience celebrated by Roucher-Deratte in 1807 and reported by Foucault (Foucault, 1994 p.107). As Schubert notes direct observation and the use of embodied skills may be how qualified doctors preserve their experience as a source of power and the clinical presumption that diagnosis consists in

cross-checking the plausibility of readings from machines against subjective perception (Schubert, 2011 pp.855-6). Mesman gives examples of doctors and nurses relying on touch and sight to modify or parse the readings provided by the various devices in neonatal ICUs, exemplifying Thompson's notion of ontological choreography as described by Prentice, and Harris referencing Lave and Wenger, notes that learning manual skills is part of belonging to a community and a profession (Harris et al., 2015 p.22; Prentice, 2013 p.38; Mesman, 2008 p.31).

Description is a step along the route to knowledge in that it is essential in learning to see, or indeed to hear or to touch, but in order to maintain what we might call the integrity of the gaze, description must not go beyond what is observed. Medical education, just like other forms of professional education, is concerned with the proper use of appropriate and accurate terminology to describe what is seen, felt or heard (Anspach, 1988; Good and Good, 1993; Holmes and Ponte, 2011). It is noticeable that clinicians often use visual metaphors such as 'pattern recognition' to describe how observations are assembled in order to build a 'picture' of a patient, in reality a picture that may have been assembled through observations from patient histories, listening, test results, x-rays, scans, and other more immediate visual cues, but these atlases and triangulation processes are not generally available to students in the learning situations described here. Since at the time they take a history or conduct a physical examination they have no access to such inscriptions, students are discouraged from reaching premature conclusions, mimicking the scenario of their clinical examinations.

Foucault's notion of the gaze provides an overarching principle that allows the situation of some significant aspects of learning in the clinical environment, how 'the illness of some (is) transformed into the experience of others', in particular the tutor's stance and the role of speech (Foucault, 1994 p.840). For Foucault, the gaze characterised by its freedom from theory, and the restraint of clinical discourse that privileges a syntax of sight, suggest the virtues of silence, observation and experience before judgment. Thorough and detailed observation is seen as the bedrock of clinical enquiry and the 'purity' of the gaze implies that symptoms should not be 'looked for' because they presuppose a condition, and hence close off avenues and potentially strip the gaze of the restraint of discourse that is the source of its power. The very existence of a curriculum ordered around classifications such as body systems and themes means that such purity cannot be maintained in teaching, but the practices observed in the clinical environment indicate that the gaze remains a marker of privilege and a model of

professional practice because it is exemplified through the tutor's stance as well as directly encouraged through the exhortation to 'say what you see'.

Discussion

However the notion of the gaze also tends to compress the practices that feed into the consultation and the summary that results from it and as Foucault says, 'it is not the gaze itself that has the power of analysis and synthesis, but the synthetic truth of language, which is added from the outside, as a reward for the vigilant gaze of the student.' (Foucault, 1994 p.59).

Prentice refers to the epistemic anxiety that surgeons feel when technologies and treatment regimes occasion the ontological choreography that shifts them between objectification of the body and invoking the person. She also draws on Latour's idea that bodies and body parts come into being through the articulation of differences to suggest that the surgeon and the patient shape each other through mutual articulation (Prentice, 2012 p.229). Forrester also points out that there are always two parties in the psychoanalytic enterprise and that psychoanalytic knowledge is generated by both (Forrester, 2007 p.818). This is perhaps most evident where it is visible when the operative site is constructed from the patient's tissues by a surgeon, but it is also applicable to the consultation where the doctor and patient co-construct the case through the history and the physical examination of the patient's body through ears, eyes and hands, as well as through instruments and artefacts which may include readings, scans, or as in one case cited above, diaries. In analytic terms mutual articulation reinstates the patient, reaffirming the centrality of the individual in clinical thinking and in clinical placements.

This is important because as Prentice argues, a purely cognitive approach to learning not only erases two bodies, both the patient's and the practitioner's, but it also ignores technique, perception and emotion in the craft of medicine. She underlines the necessity of paying attention to the ways in which medical knowing becomes embodied through practice and how 'small daily actions' connect with 'higher' level abilities such as judgement (Prentice, 2013 p,135). She suggests these abilities are emergent properties of the experience of observing other doctors through an accumulation of 'information, skills, practice and experience', and draws attention to how hands connect an actor to an object (or a patient) much more directly than either vision, smell or hearing (Prentice,

2013 pp.135,249). Furthermore the dominant form of medical education is practice within a milieu which avoids the isolation of clinical skills as privileged over aspects of medical professionalism such as the provision of compassionate care, but it also encompasses 'The hierarchical and institutional structures, the mortification of subordinates, the powerfully enforced norms of dress and comportment, and the affective intensity of the experience [that] encourages trainees to embody the norms and practices of physicians.' (Prentice, 2013 pp.261,135; Bosk, 2003).

Prentice builds on Lave and Wenger's idea of the participation framework that 'dissolves dichotomies between cerebral and embodied activity' and decentres the individual to concentrate on the community of learning and the multiple relations through which persons define themselves in practice (Lave, 1991 pp.52,53-4). For them 'agent, activity and the world mutually constitute one another' so 'there is no activity that is not situated' (Lave, 1991 p.33). In their observation of apprenticeships they saw how learning came from students' observations of the work practices of their masters and they offer 2 aphorisms that are particularly apposite to this study, a) 'Learning is a way of being in the world and not a way of coming to know about it' and b) 'Speech is a way of acting in the world not just talking about the world', (Lave, 1991 pp.24 and 22).

Ethnographic seeing as Venn and Bowker say, eschews 'internalist methodological commitments' to concentrate on practice where learning is seen as a creative process set in a social context, but a commitment to this type of observation requires an account that connects practice to understanding (Vann and Bowker, 2001 pp.253,252). The use of instruments provides a parallel where students are sometimes taught to hold or manipulate them in a counter-intuitive fashion which privileges the tool's purposes over their own comfort, to de-familiarise them with their own bodies (Prentice, 2013 p.537). In that situation students have to reconfigure embodied assumptions about how to hold and manipulate things, and 'get used to' new ways of doing so. Similarly in the clinical placements described here they have to associate particular (also embodied) ways of speaking and acting with ways of questioning, understanding, reasoning and reporting. The rituals, rhythms and rules embedded in the scripts and mnemonics that are rehearsed in clinical placements and the senses of sight, touch and hearing combine to become the tools for seeing and learning, and patients are the exemplars on whom they are practised, and through whom students learn how to increase their understanding by comparison. Students internalise the 'the communities' way of going on' by recognising and exploring patients' problems and turning them into analogues of problems

encountered with other patients to help them decide what to do (Forrester, 1996 p.7). So in clinical placements patients' cases are created through a process of mutual articulation that includes interaction with peers and tutors, where students practise the communication, manual, aural, tactile and visual skills they will need to take a history and perform the appropriate physical examination.

Lave and Wenger and Prentice were concerned with apprenticeships where students were learning from 'masters', but although clinical placement teaching provides a form of work practice that combines the cerebral and the embodied, since the reforms of *Tomorrow's Doctors* it is no longer if it ever was, a 'pure' apprenticeship experience where students simply 'pluck' learning from participation in a community of practice, but one with timetabled sessions where learning is mediated through the curriculum and the tutor (Lave, 1991 p.52). The choice of patients and the control of information about them are structured by the curriculum, the rotations and the outcomes that can be traced back to *Tomorrow's Doctors,* combined with the times and spaces that frame the practice as well as the patients that are available. These factors and a variety of descriptions and classifications modify both the purity of the gaze and the apprenticeship mode of learning. In clinical placement teaching students rarely encounter Atkinson's 'hot' medicine because the 'gross manifestations' of disease have been controlled in the patients they see and now most of the time the curriculum tells them what they are looking at as well as what they are looking for, however much tutors reiterate that they should just say what they see (Atkinson, 1997 p.44). Foucault says that clinical placement provides 'the endless play of modifications and repetition… [that] makes possible… the setting aside of the extrinsic' but this applies to unmediated practice not to clinical placements organised around a curriculum (Foucault, 1994 p.110).

The point of teaching through patients is for students to find out about them, so one clinician's saying at the end of an discussion about a patient, 'I know, I've read the notes', underlined the presumption that all the information necessary for understanding a patient's condition is discoverable by taking a history and performing a physical examination. No recourse is had to notes, test results or any other source or inscription device because they would indicate the diagnosis for which the student is searching (HcY3). It is only after the patients have been examined and discussed at the bedside by the whole group that tutors may fill in their story in the corridor, describing their confusion on admission or showing their x-rays on a monitor, perhaps providing a comprehensive list of their co-morbidities and drug consumption, or imparting additional

information about a patient's experience of the onset of a stroke and treatment in hospital (HcY3), (GPbY3), (GPaY1). Visual aids such as X-rays or scans were never used in the presence of the patient, either in the interests of maintaining the rule that students are supposed to find out about the patient without benefit of any inscription devices, or another rule that patients' access to data about them should be quite closely controlled.

Maslen suggests that 'The gap between decision-making as rational thought and intuitive, embodied and sensory action is not only a matter of the visibility of ways of knowing, but of legitimacy' (Maslen, 2016 p.162). Her respondents describe their sensory judgements as automatic, intuitive and unconscious and see them as a hallmark of expertise (Maslen, 2016 p.167). On one hand they treat the clinical use of their senses with caution because they do not 'necessarily satisfy the burden of proof', on the other as one said, 'It is a symbol of being a doctor and professionalism' ,and another that 'we need good clinicians and we're not making them any more' because doctors are now practicing defensive medicine that relies on tests, computers and models (Maslen, 2016 pp.169,171). Her respondents say that the ability to bring together multiple strands of information makes a diagnostician, and sensory skills are part of that, tests cannot provide the holistic view and the sense of care conveyed by the verbal and physical examination of the patient.

Decentering the individual facilitates an inclusive perspective that can focus on the development of skills in a community of practice where speech, touch and hearing inform reflection, and an exploration of the utility of the gaze in understanding the practices used to develop knowledge and understanding, as well as contributing to the discussion of the uncertainties that attend learning in clinical placements. The concepts of mediation and articulation assist the analysis of the observations, facilitate exploration of the links between seeing and hearing, touch and learning, and help to distinguish the characteristics of different clinical skills and how they are combined

Clinical placements unequivocally support Maslen's respondents' embodied sense of what it is to be a clinician by bringing students together with patients, tutors and peers in a working environment in a community of practice where the senses are privileged over tests. To paraphrase Lave and Wenger students learn through being in that world, and speech is the main way of controlling understanding and expressing the evidence from all their senses, as well as a highly significant form of action through which they participate in it.

This chapter and the previous one have drawn on observations and tried to understand them better through the consideration of place, time, position, and the nature of the often embodied skills that are being deployed, as well as through their articulation in a double sense: the mutual articulation that takes place in the community of practice, and their expression in speech, how they fit together, how vision, hearing touch and speech are combined and how speech is as critical in demonstrating understanding as it is in acquiring it. It has argued that senses, including the gaze, whether public or private are better understood not as intermediaries but as mediators, and explored how they are modified by the interaction between all the participants at the bedside to co-produce a case. At each stage of seeing, hearing or touching students have to transform the evidence they collect and at the same time interrogate it and learn to discern difference through comparison. Patients are the interactive exemplars that are shaped and categorised through the doctor's senses but ultimately rendered into speech, where precision is the only way of ensuring the comparability that has to underpin thinking in cases. The next chapter will consider further how the spoken word is embedded in the curriculum, and how the form it takes is essential to an understanding of the practices of medical learning and reflection, and how knowing and understanding become embedded in students' practice.

10. A verbal trade

'It is description, or, rather, the implicit labour of language in description, that authorises the transformation of symptom into sign and the passage from patient to disease and from the individual to the conceptual. And it is there that is forged, by the spontaneous virtues of description, the link between the random field of pathological events and the pedagogical domain in which they formulate the order of their truth. To describe is to follow the ordering of manifestations, but it is also to follow the intelligible sequence of their genesis; it is to see and to know at the same time, because by saying what one sees, one integrates it spontaneously into knowledge; it is also to learn to see, because it means giving the key of a language that masters the visible.' **(Foucault, 1994 p.114)**

The implicit labour of language

The stethoscope may have become a common signifier for medicine, but talking to patients is the quintessential activity in clinical practice, as one specialist said to students at the end of her introduction to a new rotation 'You'll have to talk to patients. After all it's what you'll be doing for the rest of your lives', and a GP asked a student group 'Do you like talking to patients?' (HeY3), (GPcY3). Roter and Hall say 'talk is the main ingredient in medical care and [that] it is the fundamental instrument by which the doctor-patient relationship is crafted and by which therapeutic goals are achieved' (Roter and Hall, 2006 p.3). This chapter investigates the implicit labour of language, by exploring 'the spontaneous virtues of description' showing how students learn to describe and re-describe the information they gather from patients in order to travel from the individual to the conceptual and to integrate knowledge through speech (Foucault, 1994 p.114). It uses evidence from the observations and from course and GMC documents, as well as retrospective participant observation from the author's work in the school between 2005 and 2011. It argues that despite the undoubted influence of an elaborated communication skills framework in this new medical school, the assembly and re-assembly of speech may still be traced to the specific contexts and structures in which it is embedded, and that it is better viewed as a consequence of those structures than, as

some have suggested as a form which itself determines students' or indeed doctors' perspectives on their patients (Apker and Eggly, 2004 p.414; Cribb and Bignold, 1999; Anspach, 1988).

Neither students' facility in talking to patients, nor the language that they use should of themselves be taken to infer how students view patients, rather the observations of the shifts in the style and content of feedback by students to patients, to colleagues and tutors respectively indicate that the forms of speech are situated and adjusted for its audience. This chapter argues that Anspach's claim that medical personnel are 'used by the very words they choose' is an example of what Bourdieu calls the 'interactionist error' which reduces relations of power to relations of communication. The chapter is concerned to trace how the labours of representation, categorisation and implementation continue to reproduce clinical authority and hierarchy even in the absence of the authority structure of a firm (Bourdieu, 1992 p.234ff)

Understanding learning in the clinical environment

Doctors and medical students deploy most of their senses and a battery of indicators in the diagnosis and treatment of patients. It is possible to see and hear what they do, and to draw on their and others' accounts of for example, tacit knowledge and mimetic learning to try to understand what is happening, but important to resist the temptation to take a more or less reductionist view that either speech, the gaze or distinctions between manifest and latent, explicit and hidden, competence and care or indeed uncertainty, holds the key to understanding medical education. Acknowledging the complexity of the practices that have been observed, it is now necessary to shift focus from seeing, hearing and touching, to saying, and specifically to explore further how speech and its forms can assist an understanding of learning medicine in the clinical environment.

Arguably the gaze, 'a language without words …that did not owe its truth to speech but to the gaze alone' is a quintessential expression of tacit knowledge which may be developed by using the mind to combine what is seen and heard, and embodying actions to get a feel for procedures (Foucault, 1994 p.68).This process is most obvious in the learning of physical skills such as feeling the pulse or percussion, the 'hunger for technique' to which Schön refers, but it may also be applied to posture, what Bourdieu refers to as 'hexis' and indeed to observation at the bedside (Schon, 1983 p.288; Bourdieu et al., 1992 p.13). But such physical mimesis based on observation and

replication is not sufficient to capture and understand either the restraint of clinical discourse to which Foucault refers, or Schön's 'long lines of invention and inference', but the reframing that allows situations to 'talk back' suggests a way forward (Schon, 1983 pp.130 and p.132).

Medical students' successive retelling and summarising of histories and physical examinations may be construed as an enactment of this process of reframing, as the spoken tools for as well as evidence of reflection-in-action, that demonstrate the students' grasp not just of language, but of reflection and indeed restraint (Schon, 1983 p.68). An examination of the form of the summaries used in clinical placements and their development assists the exploration of what Schön saw as a promising research topic i.e. how people develop the feel for language and repertoire that informs reflection-in-action (Schon, 1983 pp. 271-2). The repertoires and forms of communication are critical to students' understanding and performance of what it is to be a doctor.

The Birth of the Clinic's account of a fundamental shift in medical understanding is useful in comprehending the character of clinical enquiry and practice even if it over-estimates the contrasts between pre- and post-revolutionary medicine and may be 'unsociological' (Atkinson, 1995 p.41). In the present context it may be best to judge it by Bourdieu's criterion for theory as suggested by Baert, that is its ability to indicate where to look, and by how it can guide the detailed analysis which Atkinson sees as central to the sociological enterprise, recognising that 'The gaze is mediated and shaped by the discursive resources – of describing and classifying – that are socially shared and socially transmitted in the course of instruction and collegial discourse.' (Atkinson, 1995 p.ix; Baert, 1998 p.29). This may be achieved by unpacking the implicit labour of language in description and tracing how knowledge is integrated into speech.

Rehearsing communication

In a conversation with a cardiologist she explained that she deviated from the curriculum's approach to written work not simply because she couldn't afford the time to look at it, but because students needed to learn how things were done in medicine which she described as 'a verbal trade' (IhY3). Students she said have to learn how to present information to their colleagues and patients and so they must develop the 'thinking and verbal facility' that is essential to their work once they graduate: medical work and medical knowledge are both enacted and grounded as Atkinson says in 'a great deal of

talk between colleagues or between teachers and their students' (IhY3), (Atkinson, 1995 p.90). As Kurtz et al say 'doctors perform 200,000 consultations in a professional lifetime, so it is worth struggling to get it right' (Kurtz, 1998 p.7).

Spoken interaction and presentation is used to express, reinforce and validate learning and as the observations confirm, speech is the predominant medium in clinical placement learning with tutors and patients, 'textual forms of *talking* [that] actually constitute the work' (his stress) (Atkinson, 1995 p.56). Teaching at the bedside or in the surgery as well as in lectures is highly interactive and Socratic where students are constantly asked by tutors to explain what they are doing or did, what mechanisms might be at work, or how they thought they or their peers performed (Apker and Eggly, 2004 p.418; Forrester, 1996; Atkinson, 1995 p.90; Anspach, 1988 p.360).

The author gained a privileged insight into the students' acquisition of and practice in communication skills because over a period of six years between 2005 and 2011 he facilitated a number of communication workshops, notably the so-called 'master classes' in hospitals that take place in the three clinical placement years. These classes, usually held in the hospital where the students are based for their rotations, bring two or more student groups of up to four students together to form a group of between six to ten students, facilitated by a clinician and another non-medical facilitator, with two simulated patients (SPs). Simulated patients are actors practised at performing the roles of patients and doctors and they are used throughout the course in communication skills teaching and also in exams. Students are asked to come to these master classes with scenarios that they want to explore, around which the facilitators and the simulated patients devise a situation designed to stretch the student's skills. The class divides into two groups with one SP and one facilitator for each. The situations are played out by one student and one simulated patient for between 5 and 10 minutes in front of one of the facilitators and the rest of the group. At the end, as is common elsewhere on the course following students' interactions with patients, the community of practice takes verbal form when peers are asked to comment on their performance, the facilitators make observations, and in the master classes SPs are also asked to contribute and say how the interaction with the doctor/student made them feel, providing a 360° appraisal. These sessions last 3 hours with a break, and in that break and at the end the groups come back together to discuss the situations and solutions they have performed. Typical scenarios were trying to get a consultant to come to see a patient who was causing concern in the middle of the night, dealing with issues of patient compliance, or with complaints and mistakes.

These exercises allow students to practise difficult situations in a safe environment and an opportunity to explore their performance in a broad sense. In the course of the research for this thesis during a break between patients, a 5th year student told me how effective it had been for him just watching another student trying to cope with explaining a mistake to a patient's relative being played by a particularly good simulated patient and he mentioned her acting credits as proof of the quality of the performance (GPdY5). Although speech, its order, structure vocabulary and tone etc. is the central element, students are schooled to pay attention to body language, and it is frequently a significant topic in feedback. It is noticeable for example that when sitting with a patient in a room as opposed to at a bedside, students not only took care to turn to face the patient without any obstruction such as a desk between them, but they inclined their bodies towards the patient with their hands in front of them, clasped in their laps or placed on their knees (GPaY1), (GpcY3), (Bourdieu, 1992 p.13). A masterclass that dealt with trying to get a consultant to come to see a patient considered the details of the physical space, whether a ward or a corridor, and the possibilities it might afford for physically obstructing his escape route. Acting out these scenarios throws up a wide variety of behaviours in a workshop situation that requires rehearsal, observation, comparison and reflection. Students learn that building a relationship with a patient and thinking about open or closed questions and posture are essential professional skills that they must learn, practice and deploy in the same way as physical skills, as tools for exploring the patient's history and performing a physical examination.

By the time they get to the three years of full-time clinical placement that are the focus for this thesis, students are well-drilled in the protocols of communication with patients. In the clinical placement sessions that were observed they introduced themselves to the patient as a medical student and asked permission before taking a history or conducting a physical examination, and they were assiduous in explaining what they were doing. Depending on the year they are in, or the purpose of the session, the process may be separated or truncated; so for example in the third year one student will do the history and another the physical examination, and management and treatment are not dealt with extensively until the final year of the course.

Feedback and repetition

As already noted, spoken interaction makes considerable demands on memory and, no matter which year they are in, students are concerned not to forget anything. In one first

year session the merits of having routines for carrying out tests were set against the virtues of using unpredictable brushes or pinpricks to explore neurological damage so the patient could not predict which would come next (GPaY1). It was noticeable that a year 5 group had requested a refresher session devoted to neurological examination because there they were told that the purpose should dictate how the test should proceed (HnY5), (GPaY1). In the 5th year session students were encouraged to think about the reason for the examination of the lower limbs where distance from the body's core might be relevant to the diagnosis, so doing all the 'sharp' tests in a sequence down the limb would be appropriate since the purpose was to ascertain the point at which feeling was lost (GPaY1), (HnY5). It was in this session that a student claimed she had not forgotten anything, reflecting the effort it took to remember what to do without resort to a set order (HnY5). Students must combine skilful testing with expert observation and learn to judge whether and if so how to adjust the sequencing of the history and the physical examination depending on the purpose of the investigation, and in the light of their findings as they proceed.

Students try to reach shared understanding with the patient by recounting or summarising what they have learned back to the patient, an account that may include what led to the patient being in hospital or at the surgery, a re-description of pain or other symptoms, and an explicit enquiry about whether the summary itself has missed anything. In year 5 when students in general practice take patient consultations on their own without a doctor present, they summarise the results of the history and examination for the patient in an explicit attempt to check they have covered everything, as one student said to a patient 'I'll summarise, but butt in if you want' (GPdY5). After that the student presents the patient with a diagnosis and a proposed treatment. When the doctor comes in before the end of the session the summary for him or her is delivered more rapidly and takes the form of a chronological history, followed by the character of the complaint and the associated pain, outlining what it is and what it isn't, and then relevant background information about the patients' lifestyle, alternative or differential diagnoses, and proposals for any further investigation or treatment. Apart from their rapidity, summaries for the tutor are likely to use numbers for test results such as BP, and terms such as dorsal, anterior and posterior, or apex, and acronyms (HcY3), (GPdY5).

This repetition helps the students to confirm their own recall of what they have been told, as well as re-affirming it with the patient to check that they have addressed their concerns, before recounting their findings to the tutor: effectively in Schön's terms, a process of

reframing. To do this, as a GP said at the end of a 5th year session, students not only had to gauge patients' capacities for understanding, but to be to be careful in the use of terminology (GPdY5). As Heath writes, 'By (sic) expression in words the communication between doctor and patient becomes explicit. Only if the doctor can find words which the patient recognises as describing his or her own experience, can the patient be certain that he or she has been understood.' (Heath, 1995 p.38). Perhaps in deference to the patient, although possibly because it is easier, these accounts remain chronological but they are the first stage in the process for carrying forward how the patient's illness framework might be reconfigured and juxtaposed or balanced with other (often medically-informed) information to achieve a diagnosis: i.e. as a form of rehearsal, thinking out loud or indeed, reframing or reflection.

These reiterations may be more or less transformative of information, and through experience students learn the structures, vocabularies and temporal limits appropriate to each situation or stage. In the surgery or at the hospital bedside up to the 5th year, students have a mixed audience consisting of the patient, the tutor and their peers, where tutors can reassure patients by telling them that they are not going to hear anything they don't already know (HmY3), (HjY3). In year 3 ward teaching the community of practice is made manifest by one student taking the history and another performing the physical examination then both reporting back to the tutor at the bedside in the patient's and their peers' hearing. After that another student may be asked to combine and compress the findings into a summary sentence, and at any time members of the group may be invited to comment on their peers' performances. Thereafter a synthesis might be further considered in the corridor where the tutor can add the details of the patient's presentation in A&E or go to x-rays or ECGs; it is only at this point that things the patient might not wish to hear might be discussed (HcY3), (Hgy3). Along the way the structure and content of the summaries are progressively refined to exclude 'irrelevant' detail as the account is distilled in its migration from the patient to the virtual or actual consultant.

A narrative that follows the sequence of the history taking and the physical examination, itself perhaps driven by mnemonics or mantras is easiest to present as the first stage in a series of verbal interactions that contribute to a diagnosis. Generally the account transmogrifies as the temporal and physical distance from the patient increases, away from them and their wards, and thence eventually to the talk among specialist colleagues to produce the different more 'medicalised' cases described by Atkinson (HkY3), (Atkinson, 1995).

In assembling their history-taking students have to remember the ‘scripts’ for each body system or speciality i.e. the appropriate questions for taking the history and performing the physical examination for say, neurological or respiratory cases. In third year clinical placements the rotation defines the body system and hence the questions to be asked and the nature of the examination and there is no access to the patient’s notes, whilst in slowed-down primary care sessions the doctor normally provides some patient history, and in year 5 when students see ‘what comes through the door’ in general practice, they have to decide the appropriate examination in the light of the patient record and what they learn from the history and physical examination. In the exam, candidates are given a scenario of the presenting complaint, and the regulations state ‘the student will be asked “What is the most appropriate physical examination to perform, based upon the history obtained?” The examiner(s) will have agreed in advance what this is, and will direct the student if their response is incorrect’ (Code of Practice on Assessment Phase 1 1.2.5): it is worth noting in passing that the need for examiners’ prior agreement acknowledges the contingent nature of these judgements to which a tutor also drew attention (GPbY3), (and see chapter 9 *Restraint and uncertainty*).

On the basis of what they observe and what the patient tells them, students must select and adapt the correct script and the appropriate physical examination from their repertoire to meet the case; as one student said ‘Quite a bit is based on observation, but there’s always a danger of drift … the question is always what am I looking for?’, and referred to the ‘tramlines' from which students can start to consider what they are hearing to inform their enquiry(IuY4). Tutors urge students to be systematic and thorough so it is not surprising that while they are learning they seek the security of mantras, mnemonics, acronyms, ‘pillars’ and 5 point stages, to remember exactly what they are supposed to do, especially in stressful situations such as they may encounter in A&E or more likely for most, exams (HnY5), (HgY3), (HfY3), (GPaY1), (and see the next section on *’Hot’ medicine*). However the dangers of concentrating too hard on the ‘what’ is shown by the student who fails to process the information and gives a somewhat ritualistic performance where what Bourdieu termed ‘the performative logic of symbolic domination’ prevails (Foucault, 1994 p.110; Bourdieu, 1992 p.85), Such a performance lacks authenticity and not only risks producing a certain disengagement from the patient, it is also less likely to inform the flow and choice of questions or to feed into a summary that carries the process forward to the appropriate physical examination and thence to the construction of a differential diagnosis.

‘Hot’ medicine

Because the curriculum narrows the choice of scripts, one of the main reasons students are encouraged to attend A&E or AAU is so that they learn to start from first principles, indeed as Goodwin suggests disruption to routine is perceived as a necessary part of developing expertise (Goodwin, 2009 p.173). Here especially, as well as in exams and in some general practice sessions, students have to be systematic and thorough, but they are urged not to forget probability and to ‘keep it simple and safe’ (IuY4). As a hospital tutor said, the myth that exams feature uncommon conditions is just that, a myth: it’s obviously easier to find suitable patients with common conditions (HnY5).

The dementing and/or confused patient who presents in A&E was used in 5th year as a thought experiment about how to go about finding out what is wrong when a patient is unable to communicate, starting with how to get a history from a partner or other relative to determine whether the presenting condition is acute or chronic. The tutor talked about the importance of structure in assessing patients in A&E and made liberal use of acronyms as mnemonics when referring to possible investigations. Students should ask themselves what is likely to cause the symptoms they see, for example alcohol, chemotherapy or other drugs, or whether the patient might be diabetic, is the source of their infection some injury they hadn’t noticed? (HnY5). The patient’s condition should be classified by assessing their alertness, their voice, the nature of the pain they were suffering and their (un)responsiveness (AVPU), perhaps using one of the available scales such as the Glasgow Coma Scale (GCS) or a Mini Mental State Assessment (MMSA) (each referred to by its acronym), but taking care to stick to one of them and going through it to the end to ensure that nothing is missed (HnY5). If the patient has an infection, what is its site, for example is it urinary, in the chest or elsewhere? Is it a vascular problem such as a stroke, MI or subdural haematoma, or metabolic? Once such a classification can be determined, the next stage is to consider non-invasive tests; hence for urine, can the patient produce it and if so is there any blood in it, what is its specific gravity, is the patient dehydrated? An ECG will allow a view of heart function and a blood test will give a blood chemistry profile, measure glucose, indicate hormonal imbalance, trace inflammation pathways etc. Then, again depending on what has already been discovered, imaging such as chest x-rays, urinary scans or CT scans for some haemorrhages may prove helpful to the process of ‘coning down’, that is refining and selecting the information to establish a cause or diagnosis (HnY5). The tutor who presented this systematic structure for investigation stressed that it was essential to

review the outcomes of whatever is done to the patient because they will provide crucial information (HnY5).

Undergraduates are not allowed to treat patients so these thought experiments or ‘talk throughs’ about A&E or patients presenting with chest pain gave them a flavour of hot medicine, and their abilities to respond as a team to rapidly developing situations were explored through simulations. It was only possible to observe two different simulations with two pairs of female students, and although they were introduced by the tutor as ‘a bit of fun’ beforehand, the students themselves said that being on the ward would be less stressful, because in the simulation they would have to make on the spot decisions: indeed their behaviour was noticeably different from that observed on other clinical placements (HlY3).

The whole group of four were first introduced to sim man and were struck by the rise and fall of his chest, but a bit disturbed by his blinking eyes, and they asked why his mouth was open – the answer is for intubation. In one respect at least he was easy to treat because there were marks on his torso for the placement of electrodes and the tutor showed them the pulses at wrist and ankle and the connections to screens showing heart rate and blood pressure in graph and numerical forms. Students were instructed on how to use the telephones and they were given a written scenario, which featured the ‘the worst prognosis of all infarct locations, mostly due to larger infarct size’ followed by statistics on just how bad it was, as well as chest x-rays and electrocardiograms (HlY3).

Illustration 8 Sim man

The tutor sat in a control room resembling a TV or radio studio where he was able to manipulate sim man's signs and provide his voice as well as observing the students through the one-way glass and 2 cameras. The scenario included delays in test results, malfunctioning bleeps and lost details from the nursing home where the second patient, who was completely unable to communicate except in rather realistic groans, was a resident. The students were accompanied by a clinical skills facilitator who carried out the treatments they prescribed and who pressed them for details of the dosage rates for oxygen and morphine (HlY3).

During the simulation they had to respond not just to sim man's deteriorating condition but to problems of communication both within and outside the hospital. Also as the clinical skills facilitator said, 'you're likely to be doing it with someone you don't know', and the tutor added 'it's about teamwork', and this was the only occasion on which students were observed working together. Its artificiality led to some embarrassment and self-conscious rather awkward humour which was never observed when students were dealing with real or indeed simulated patients. The groups varied in their ability to tell the

patient what was going on and ‘your heart rate’s gone’, as the tutor observed afterwards, was probably not an ideal explanation to give to a patient (HlY3).

In the seminar room after we had all left the simulation suite and when asked how they thought it had gone the students described the experience as ‘awful’. Feedback to one pair from the others noted that they had not really kept the patient up to date with what they were doing, but they had managed to keep calm. The tutor said they had asked most of the right questions but had become distracted by ‘stuff’ and hadn’t asked the first patient who was able to communicate whether he had a history of heart problems or whether he smoked. In an echo of ontological choreography he said ‘Don’t get bogged down in ECGs, just learn to recognise some patterns’. He asked them why the blood pressure was low, where acid comes from and told them that morphine doses are calibrated according to the person’s size, among other things (HlY3).

This experience of simulation served to highlight how familiar talking to patients and simulated patients, i.e. real people, had become for students. The scenario provided more information on the ‘patients’ than was given at the bedside, but also showed how ECG and other readings could become a distraction in an emergency and how test results could not always be relied on, the importance of teamwork not just a knowledge base, and of screening out distractions. The curriculum and its rotations normally limit the scope of enquiry and most tutor-accompanied placement experience allows sufficient time for taking a history and conducting a physical examination albeit without any other information. The simulation drew students’ attention to the potential for disruption and confusion and implicitly and ironically, to the relatively calm artificiality of tutor-led sessions and information flow management in clinical placements.

Words and bodies

Sociological commentaries on medical education have evinced a perennial concern with the effects of words and the nature of training on the relationship between doctors and patients, from the ‘boys in white’ who classified time-consuming patients as ‘crocks’ to Anspach’s suggestions that doctors are used by the words they employ, and that account markers and the language of biological processes encourages the depersonalisation of patients (Anspach, 1988). Mizrahi’s account of the acronyms he encountered and the most important lesson that interns learned, to get rid of patients (GROP), builds a powerful case for a profession that dehumanises its clientele (Mizrahi, 1985).

Others decry the use of simulated patients in courses, claiming that they tend to produce students who lack an authentic relationship with patients and foster a view of them as consumers (Hanna and Fins, 2006). Donetto suggests that patient-centered practice has become a box-ticking exercise, that teaching settings convey contradictory messages where an older generation of practitioners implicitly or not, indicate that it is largely cosmetic, and Hanna and Fins say that mastering the skills and tricks of surface communication is sufficient to pass OSCE exams (Atkins et al., 2016; Donetto, 2012; Hanna and Fins, 2006 p.267). Donetto asks 'How do we teach students to be sensitive, receptive, open and interested through practices which work predominantly on the principle of behavioural conditioning?', and both argue that the remedy for this depersonalisation of patients is to give students a more critical understanding of the medical learning process and an appreciation of the power relationship between doctors and their patient (Donetto, 2012 p.441; Hanna and Fins, 2006). Greenhalgh and Hurwitz in an echo of Good also say that students' 'natural' empathy is suppressed by their use of the terminology of measurement and the learned expertise of the history, and that what they call the 'relentless substitution' of their empathetic and interpretive skills for measureable and reductionist 'scientific' skills is anything but a successful element of the modern curriculum (Greenhalgh and Hurwitz, 1999). As already noted, Bloom argued that the cultural norms of the professional environment are the important factor and that adding humanities courses and curriculum revisions will not produce significant change, 'only when students can see [these] values operative… will the lesson become fully effective' (Bloom, 1995 p.908). Anspach also offers a version of the hidden curriculum in her suggestion that 'case histories socialise those who present them to a culture or world view which may contradict the explicit tenets of medical education' (Anspach, 1988 p.357).

The idea that doctors are used by the words they employ, a version of the Sapir-Whorf hypothesis that language structures rather than merely reflects perceptions of reality, is the strongest version of approaches that range from seeing a conflict between the language of measurement and competence and the language of caring, to the assertion that the form for the write-up structures students' views of their patients (Good, 1994 p.77; Anspach, 1988). This thesis proposes that to some degree what Foucault calls true speech, and what we might also term approved speech is more significant in medical education than in most undergraduate programmes, not just because it plays such a significant role in assessment but also because it is the chief mechanism of instruction in the clinical environment. So without denying the significance of the terminology used,

the argument is that both its content and its form are influenced by the context in which it is expressed, as Atkins et al put it 'Talk is always a performance in context' (Atkins et al., 2016 p.7). This is not to deny the importance of language itself but to suggest that it is unwarranted to suppose that the language that is used about patients determines students' views of them: speaking professionally is about choosing the language and the syntax, pace and structure appropriate when speaking to a patient on the ward on the one hand, or to a colleague in the corridor on the other. As Hillman and Mizrahi have shown behaviour towards patients is affected by systems of governance, the time available and other situated variables that may influence the language used, attributing disdain to words is as Bourdieu tells us, erroneous (Hillman, 2016; Bourdieu, 1992; Mizrahi, 1986).

Some concerns about the depersonalisation of patients derive from versions of symbolic determinism and suspicion about behaviourism that in turn may suggest some of the underlying mechanisms of moral enculturation and the hidden curriculum, but for Bourdieu they ignore the socio-historical conditions of their production and reception (Donetto, 2012; Hanna and Fins, 2006; Bourdieu, 1992 p.4). This thesis has shown how concerns about patient-centeredness were fuelled by a succession of scandals and how students learn to adjust their communications for patients and tutors, but a full discussion of students' attitudes towards patients would require a more extended discussion of emotions and affect (Sointu, 2017; Wetherell, 2012; Mc Naughton N and V, 2012). Nevertheless the observations do show how

> *'the modalities of practices, the ways of looking, sitting, standing, keeping silent or even of speaking are full of injunctions that are powerful and hard to resist precisely because they are silent and insidious, insistent and insinuating.'* (Bourdieu, 1992 p.53)

Tutors drew attention to students' body language, in a telling example saying that they had to decide what to do with their hands when reporting their observations, 'Don't fumble and stand still', and suggesting that hands clasped in front of them would be best to maintain an open posture (HjY3). 'Don't fold your arms, consultants can do that, you can't' draws attention to the boundaries of legitimate participation, and indeed it was noticeable that when students 'played' consultants in a simulation, they often folded their

arms (HaY3). Body language and sight lines conveyed students' and indeed patients' uncertainties, and it was noticeable that both tended to glance at the tutor when they were seeking reassurance that they were doing the right thing, although tutors modelling the restraint of the gaze, generally retained a neutral expression (Schubert, 2011; Foucault, 1994).

Some students on the ward preferred to conduct their history-taking sitting in a chair to bring them down to the patient's eye level, presumably in a conscious or unconscious effort to establish rapport, but when patients are on beds or couches for physical examination the students or doctors are of course generally standing above them. In the hospital, year 3 students would not always stand on the patient's right hand side, and if they did not the tutor would ask them why they were standing on the patient's left, but aside from this convention tutors sometimes asked students to think about their positions. In a debriefing after first year students' neurological examinations the tutor noted that the first student in the session had effectively set the template for those who followed and he asked them to consider whether the tests for sensation and reflexes had to be carried out on a couch as they had been (HcY3), (HgY3). He ran through the tests, observing that the limbs might be better accessed when the patient was standing, and invited students to consider whether observations of muscle-tone and strength could be better done with the patient prone, seated or standing. He pointed out that with the patient on the couch one had to reach over them to manipulate the left arm, but finally despite this reasoning he concluded by telling them to check for the 'approved' position with the clinical skills facilitators (GPaY1).

Hierarchy, time, questions and summaries

The student's account of a ward at night and the simulation both emphasised the significance of time, and the pressure of time in consultation was obliquely made apparent in a first year general practice session where students were advised to observe the patient's walk from the waiting room and use it to orient the conduct of the history and the examination (GPaY1). A year 5 session referred to the 'end of the bed test' that takes in the environment of equipment and medication delivery, as one student put it 'the number of lines' is always a good guide in the hospital and one tutor simply asked a group 'Does she look well?' (HnY5), (IuY4) (HcY3), (Maslen 2016 p.166). These quick appraisals may be what Foucault refers to as the 'glance' which 'instantly distinguishes the essential', or Maslen's 'unmediated sensing' (Foucault, 1994 p.121; Maslen, 2016

p.159). Thereafter the consultation is a form of parallel processing where questions should be designed to decide a direction to inform further questions and the appropriate physical examination that will lead to a diagnosis where style, structure and vocabulary are increasingly modified to condense information for a summary which can be recounted to tutors.

Decentering foregrounds the importance of the learning context as well as the mode of teaching and learning. It also draws attention to the Socratic method that combines with the audiences in the hospital and the consultation room to create a scenario where the violence of power is apparent because they furnish an arena for its expression, one where the reporting ritual becomes a significant method of demonstrating authority. The Socratic method of repeated questioning where students are interrogated about their findings and their proposals for treatment, reminded about relevant information they have collected and omitted to report, quizzed on questions they should have asked and didn't, questioned about their interpretation of their findings, and subject to observations about their technique remains prevalent in medical education (Bosk, 2003; Anspach, 1988 p.361). The potential for humiliation is always present and can take the form of public criticism and public face-threatening, being called a buffoon for failing to spot 'classic' manifestations, critical humour or sarcasm, and it relies on and reinforces power and deference (Apker and Eggly, 2004 pp.420-1; Lempp and Seale, 2004 p.771; Atkinson, 1997 p.90; Anspach, 1988 p.360). Identifying the mental health of medical students as a global problem where more than a quarter suffer from depression, Slavin notes the lack of good research about student well-being and aspects of medical school culture that contribute to the situation. The profession's scepticism about psychology and psychiatry, the indifference to issues of mental health, and the presumed virtues of long hours are he suggests less significant than the failure to recognise that the problem is with the environment not the student (Slavin, 2016).

Although students' future career prospects are no longer directly dependent on conforming to the quasi-norms of a firm and the observations did not uncover any examples of humiliation (tutors who indulge in it are unlikely to agree to being observed), during the 9 years the author worked in the school there were reports of tutors teaching by humiliation, given credibility by successive cohorts identifying the same culprits. The fact that students frequently chose to practice communication with consultants in their master classes was an indication of the tensions they experienced, and the GMC has acknowledged the 'long history' of bullying and undermining in medical education

(Council, 2014b p.05). In 2014 one in five of a sample of calls made to the GMC's helpline were about 'serious problems in working relationships' and three quarters of these were concerned with bullying or undermining (Crowe, 2015). In the 2014 National Training Survey 8% of 50,000 respondents reported being bullied, 13.6% reported that they had witnessed bullying and 18% had experienced undermining (Council, 2014a p.05). In a study of undergraduate medical education the reported rates were higher, 21 out of 26 respondents reported 29 incidents of humiliation, 19 direct experiences and 10 either heard about or observed (Lempp and Seale, 2004 p.771). The GMC quality assurance team found that undermining and bullying required monitoring in 23 of the sites that they visited and worryingly, that consultants were unaware that trainee doctors felt undermined by their actions (Crowe, 2015). In its visits to 12 sites in 2014 the GMC found that doctors who reported having been bullied were more likely to have made mistakes at work and were less likely to raise concerns about patient safety: the report made the suggestion that less hierarchical relationships should be encouraged to prevent undermining and bullying (Council, 2014b) The National Training Survey for 2016 reports 'worryingly' that one in twenty doctors in training had a bullying or undermining concern but they did not want to report it (Council, 2016 p.15).

Workplace pressures and 'poor communication' are blamed for contributing to the problem and flattened hierarchies and team working are seen as remedies, but where a substantial proportion of the workforce is in training there is an inherent imbalance in knowledge and power that reinforces hierarchy and continues to provide the conditions for bullying and humiliation, contributing to what the Francis report into the Mid-Staffordshire Trust described as a culture of fear (Inquiry, 2013 p.8). So although undergraduates are no longer beholden to particular consultants for their prospects of employment, the medical hierarchy continues to be reproduced in the modes of communication that are used in the learning community of the clinical environment (Bosk, 2003 pp.113,114).

The examples of tutors' questioning of the utility of particular clinical signs, hospital doctors' criticism of prescribing in general practice and the exhortations to 'say what you see' with confidence indicate that clinical placements exist in an environment where robustness is combined with hierarchy (HgY3), (GPaY1), HnY5). In these observations it was normal for the tutor to ask the other members of the group to comment on a student's performance, or to ask the students themselves how they thought they had done, both strategies that serve to generalise or soften any criticism that needs to be

made, not least because when asked to comment the other students generally began their remarks with 'You did really well …'. Tutors did press students to commit themselves but if they were not quite right they would be encouraging, using a phrase such as 'you're on the right lines', and if wrong the tutor might narrow their eyes to indicate dissent or be more explicit (HbY3), (HcY3). They might ask a supplementary question that would show how students were wrong, ask another student for their view on the specific point, or say 'no but ...', so whilst not uncritical, they took care to avoid humiliation. Perhaps the most pointed and abrupt although perfectly polite questions came from the technician in the simulation when he asked students to specify the doses for morphine or saline, or rates of oxygen delivery, and here the situation had been introduced and the potential for humiliation somewhat defused by being introduced as 'a bit of fun' (HlY3).

On the wards or in primary care students were only really safe from being questioned whilst they, or one of their colleagues were talking to patients. At any other time whether in the seminar room, at the bedside or in the consulting room, tutors might direct a question to an individual or the group. If they were presenting a case they had clerked, students would be pressed to justify the diagnosis they had presented and if they were wrong, told why. Tutors presenting information in a relatively formal lecture with slides might stop at any time to ask questions about the content or to check understanding and links with other aspects of the curriculum. One tutor was concerned that some 3rd year students had not been sufficiently challenged and thought they knew more than they did and as noted previously, when a 5th year said she thought that she had covered all the relevant stages of an examination, the tutor raised an eyebrow and commented 'Such confidence' (HhY3), (HnY5).

The concern with appropriate clothing and the insistence on standing on the right hand side of the patient's bed, the remarks about folded arms and the fact that the student playing the consultant often had his or her arms folded are indicators of a concern with both explicit and implicit understanding and of the hexis whereby relations of power are embodied so that ways of speaking and standing reinforce particular ways of feeling and thinking (Bourdieu, 1990 pp.69-70; Bourdieu, 1992). Rituals or liturgies such as formulae for reporting or summarising encourage the exercise of a technical competence that can obscure the communicative function, they often imply a temporal rule and they also create frames which are absorbed and become unconscious (Bourdieu, 1992 pp.41,85). It is through their correct performance that authority is delegated and content becomes

inseparable from its appropriate expression and 'literally unthinkable' outside the recognised form (Bourdieu et al. 1992 p.139). Bourdieu argues that relations of communication are always power relations and symbolic power serves to hide the violence that is exercised through it; but reducing relations of power to relations of communication is what he terms the 'interactionist error' (Bourdieu, 1992 pp.209,167).

The disappearance of the firm produced a different context for the reconstruction and reproduction of medicine because the shift away from year-long clinical placements in hospitals diminished as it was intended to, the power of quasi-norms to mould students' behaviour (Bosk, 2003). Nevertheless the end point of history-taking and physical examination in teaching sessions remains communication with (usually senior) colleagues, and the evidence from student-driven master classes addressing inter-professional communication indicates that consultants' authority and autonomy still present students with difficulties. Although tutors might disagree about the significance of certain clinical signs, they advised students to choose the practices that they think will be expected in exams, so students recognise the continued existence of quasi-norms but understand that for examination purposes they should stick to the school's party line and this ambiguity is embedded and reproduced through the organisation of the community of teachers and learners.

In the observations of clinical placements, the form of the summaries to tutors, their brevity, their order, their precision, what they progressively exclude and the language they employ reflect an imperative not to waste the time of senior colleagues. The summary provided for the patient is more discursive and it may also serve to check accuracy, but it does not carry the same urgency as the one provided for the consultant (Frankenberg, 1992 p.3). The open posture adopted by students in their interaction with patients contrasts with their reporting to the consultant when their stance becomes more declamatory, in an (unconscious) attempt to convey the necessary confidence (Anspach, 1988 pp.362 and 371; Apker and Eggly, 2004 p.419; Cribb and Bignold, 1999 p.199). The embodied performance of speech in clinical placements is determined by and reproduces the authority structures of medicine and is supported and conveyed through the positions and postures assumed by patients, students and tutors.

Distilling multiple mediations

Just as with the deployment of sensory skills described in the previous chapter, treating the progressive refinements of the history and the physical examination as forms in the Latourian sense foregrounds the processes of mediation that occur at each stage and a consideration of the forces that shape them. Students are explicitly told to assume that their summary should be addressed to a consultant whose position is both expressed and reinforced by the value attributed to her or his time, and it is this that dictates its brevity and indeed its pace, sometimes perhaps at the risk of inaccuracy. But to achieve that 'end' stage the student has to suppress doubts she may have about her decisions and judgements relating to the procedures she has undertaken in the assembly of information through history-taking and in the conduct of the physical examination. A tutor advised 3rd year students to say 'It's not very clear and I think it could be x' rather than making it up or going through 'the 20 possible causes of chest pain'. He advised that having a set method for summarising a history was likely to produce a more confident performance that would stand students in good stead in clinical examinations; as Smith, Goodwin et al note developing routines is 'in itself a hallmark of expertise' (HfY3), (Smith et al., 2003 p.325).

Saying what you see is important because any summary of findings should preserve the information that has been gathered so that in principle it can be used to support alternative hypotheses, and so that no time is wasted repeating tests that have already been done. Brevity, density and accuracy are best served by the use of numerical readings such as blood pressure or pulse, by the precise location and attribution of sounds and by standard descriptions of skin colour and responsiveness. Hence if the patient's notes have been consulted, ECG traces may be translated into intervals and durations for verbal transmission, or x-rays tagged with similes such as 'millet'. The spoken word is the common form into which all the information from images and sounds, touch and smell has to be translated, so as Chapter 9 argues this is a process of mediation (Latour, 2005 p.38).

In clinical placements the end point of the cascade of information, the final expression of multiple mediations, from sight, hearing, touch and graphs to rates and numerical intervals, from images to similes and so on, is in speech. The point of a verbal summary to the tutor or the imaginary consultant is to distil the information excluding irrelevancies, and it has the effect of reducing the scope for interpretation by imposing a performance

of ‘unequivocal certainty’, using forms that banish for example, doubts about the location and nature of a sound in favour of firm assertions such as that it is ejection-systolic (Anspach, 1988 p.371). But this ritualised form of the one- or two-sentence summary eschews the flexibility and possibilities for elaboration normally characteristic of spoken interaction where tone, emphasis and volume are mixed with gesture and expression and can be continually adapted to circumstances, in favour of a stripped down restricted code and a flat tone which tutors advise should avoid hesitation and be confident, in effect by making it sound as if it is primarily designed for transmission rather than inviting interaction (HfY3).

The ability to collect, reorder compress and re-present information gathered from the history and physical examination in this way as Maslen’s respondents underlined, itself becomes an index of expertise, and to perform it students are obliged to suppress doubts about their own abilities to gather and identify information (Maslen, 2016 p.167; Anspach, 1988 p.362). For example it is easier to measure a pulse rate than it is to disregard what Rice describes as the ‘rush’ of body sounds that come though the stethoscope to identify which heart valve is doing what, and indeed qualified doctors may place different interpretations on what they have heard (Rice, 2013 p.101 and p.110). As already seen there are tests where for example, students must assume that they have applied the correct pressure in a neurological examination to produce a valid report of the extent of patients’ feeling, or where they must decide how much weight to give to particular patient’s accounts of the onset or pain and how to describe its nature. As Latour puts it students have to distinguish previously unregistrable differences in what they hear, see, feel and smell but with the twist that, unlike his perfumiers, many situations lack one external fixed standard of symptoms equivalent to the box of scents (Latour, 2004 p.209). Once they have done this, medical students have to distil what they detect into a short spoken summary that may invoke the body’s invisible interior to produce an acceptable account.

This can also be understood as a process of setting aside or suppressing elements of the patient’s story of the onset of their condition or other factors deemed to be confounding, such as co-morbidities or scars or extraneous body noises. Although students are encouraged to say what they see, they are not supposed to say everything that they see, as a student put it ‘it’s not a summary of everything’, it is another aspect of the restraint of the clinical gaze alongside an avoidance of the premature application of theories, systems and philosophies (IuY4). This restraint is not only achieved through

exclusion, but also through structure, order and reasoning (Anspach, 1988 pp.360 and 366). The language used is of course significant, but de-centering it assists a focus on what Bourdieu refers to as the conditions and correlates of usage and how they influence both structure and content, order and language by foregrounding form rather than content (Bourdieu, 1992 p.14).

Discussion: the significance of speech and patients

The post-1993 shift to a curriculum that frames the content and information flow in clinical placements through rotations, and the school's commitment to communication as a patient-centered clinical skill undoubtedly facilitated a recognition of the importance of speech in medical education, and an opportunity to 'fill in' the picture of learning in the clinical environment. Understanding communication as a, perhaps the essential clinical skill is helpful in identifying the treatment of spoken descriptions as mediators and reframing devices, as forms that can be used to trace the re-purposing of information gathered through patient histories and physical examinations.

It is understandable why metaphors from religious ritual and drama have been applied to the consultation between doctors and patients because they draw out how social competence is exercised through a technical competence which may be imperfect but which serves to legitimise the speaker and allow them to speak with authority (Bourdieu et al., 1992 p.41). Ritual and liturgy capture relevant aspects of repetitiveness, guidance and even belief, as well as the function of scripts as scaffolding for investigation and reasoning, but these metaphors fail to capture the skills of navigation, reframing, restraint and reflection necessary to adapt the history and the physical examination as the consultation proceeds, and they also struggle to situate them in their wider context (Strong, 2001; Atkinson, 1995).

Competence and authority are conveyed through adherence to the forms of communication, but arguably they are also associated with impartiality and universality and a degree of professional uniformity. Beagan says that faculty see an increased uniformity among students as they proceed through their courses and that they are expected to think in standardised ways, to adopt a 'professional face' (Beagan, 2000 pp.1257-60). Medical students Beagan writes 'are learning to deny the significance of social differences; they are learning that science allows them to transcend their own

social locations' (Beagan, 2000 p.1261). The imperative of neutrality produces a medical education that is 'colour-blind, sex-blind, class blind' (Beagan, 2000 p.1263).

Tomorrow's Doctors is concerned with diversity in recruitment and to ensure respect and treatment without prejudice in the context of patient-centered medicine, and although health inequalities and the links between occupation and health are listed under the heading of the application of social science principles and methods to medical practice, the observations did not yield enough evidence to be able to confirm or deny Beagan's picture of medical education (General Medical, 2009). The argument about the significance of the form of speech might support the idea that students are encouraged to see themselves as 'neutral knowers', but it would be unwarranted to draw conclusions about the extent to which students considered the effects of class, race, gender or age on their own delivery of, or patients' access to care.

The last two chapters have explored how speech is fundamental to the learning and practice of clinical reasoning and to medicine itself, to demonstrate how as Lave and Wenger maintain speech is a way of acting, 'Language is part of practice, and it is in practice that people learn' (Lave, 1991 p.85). They suggest that speech assists the tracing of learning through practice because it is the form into which all other practices and senses are rendered (Mc Naughton N and V, 2012 p.58; Atkinson, 1995; Foucault, 1994; Lave, 1991). These chapters argue that paradoxically it is the *form* of embodied speech that provides one of the best traces for the development and deployment of tacit knowledge because it is the pre-eminent medium in which students are required to demonstrate to patients, tutors and examiners how they are thinking and what they know and, as Laurier and Philo tell us '… fieldwork reaches an impasse when it formulates its object as unspeakable' (Cited in Wetherell, 2012 p.67). It suggests that it is through the assembly of speech that medical students learn how to think out loud and to convey their knowledge, understanding and reasoning to patients, tutors, examiners, themselves and one another. The concentration on form and its assembly, rehearsal and repetition serves to qualify Foucault's notion of spontaneity by showing how tacit knowledge is assembled, by examining how students internalise the ways of 'carrying on' appropriate to becoming a doctor through the exemplars of patients' cases (Forrester, 1996; Kuhn, 1977).

As has been clear from the outset patients, virtual, simulated or actual are at the centre of the community of learning in clinical placements. Although like the conservative

radicals in the 1970's, the sociological literature has often focussed on professional power and how doctors de-humanise their patients through their practices and their language, medicine is as Forrester points out, epistemically centered on the patient (Forrester, 2007 p.810). It is students' performance of the consultation with patients at the bedside or in the surgery that instils in them the forms of reasoning peculiar to medicine. It is predominantly through the repetition of cases that they learn how to recognise similarities and differences and the appropriate application of techniques, and patients are the exemplars through which students learn how to recognise a problem and turn it into an analogue of one which has already been solved. Patients are the embodied exemplars at the centre of a process that provides the 'grammatical models of the right way to do things' and that also serve to 'ground the productive collective labour' of medicine (Forrester, 2007 p.806 quoting a paper by Baltas et.al.). Thus like Foucault, Forrester assigns epistemic consequences to medicine's (and the laws') conception of the individual which allows the demotion of theory in favour of the facts of the case, and he notes that the analogical reasoning characteristic of case-based disciplines does not necessarily either recognise contradictions, or value consistency (Forrester, 2007 p.812; Foucault, 1994). These principles and practices are not fully articulable partly because they are embodied and hence not open to scrutiny, and because in medicine patients are the cases, practices may be seen as doubly embodied, through the individuality of the patient and the student's assembly and enactment of the consultation and the summaries. This double embodiment obscures the work of conveying the rules of the game, but at the same time makes it more probable that the doctor's processes of medical reasoning are often associated with or 'hung on' individual patients.

Another distinguishing and significant feature of learning to think in cases in clinical placements i.e. 'any arrangement in which a medical student is present in an environment that provides healthcare or related services to patients or the public' is precisely the public nature of teaching, learning, and assessment in medicine and other healthcare professions. Here students' reasoning is not only exposed to their peers but to tutors and patients, whereas in law or management case studies are generally presented in written form, often in textbooks where the subjects are of course mute. And whereas exemplars or problems in science, legal or business and management textbooks can be chosen to illustrate particular points, despite the curricular classification by body system, patients usually come with some confounding characteristics, as one tutor remarked 'they haven't read the textbook' (HgY3). The Socratic method which

teaches students to position themselves in what Forrester calls 'the dialectic of [legal] argument' and inculcates students into the implicit rationality embodied in cases is already dramatized in this public arena and the relatively random nature of live cases multiplies the opportunities for mistakes and the potential for humiliation.

Foucault says research must look into the mechanisms of examination that turn an individual into a case, Rose suggests that they should be perceived as 'technical' to facilitate the analysis of 'intellectual technologies by which thought renders being amenable to being thought', Latour proposes that what he refers to as 'small intellectual technologies' are traces that help us to understand how competence is assembled, and Atkinson exhorts sociologists to concentrate on the 'distribution, transmission, legitimation, representation, and generally production in everyday settings of work.' (Latour, 2005 p.213; Atkinson, 1995 p.42; Foucault, 1994 p.191; Rose, 1990 p.62). Proposing that the practice of speech is the most significant form through which medicine is conducted and transmitted and seeing it as a practice allows the tracing not just of students' thinking, but also the assemblage of competence. This perspective helps to render explicit what Foucault calls the 'implicit labour of language in description that authorises the transformation of symptom into sign' and how 'saying what one sees integrates it spontaneously into knowledge' by showing how in practice, spontaneity is achieved through repetition and embodiment (Foucault, 1994 p.114).

The last two chapters have sought to demonstrate that in undergraduate clinical placements it is not just the content but the performance or embodiment of speech that provides the marker of knowledge and understanding, implicit or otherwise. There are differences in how students address patients and how they address tutors due to the purpose of each communication; for patients clarity, comprehensibility and confirmation, and for tutors a concise summary. The summary has to be a judicious mixture of confidence and deference which requires adjustment to posture to accompany the shift in vocabulary and syntax to produce a compressed and embodied account that acknowledges, reproduces and reinforces the medical hierarchy. Both are situations where the potential for striking 'false notes' is considerable, encompassing as they do bodily, sartorial and verbal expression (Bourdieu, 1992 p.139). Students are trained to be aware of the forms and functions of speech such as building rapport, open and closed questions and postures and the observations confirmed that as some tutors put it, 'they certainly know how to talk to patients'. As Good argued, students don't take long to recognise the element of performance and that presenting cases doesn't just reflect

reality, it constructs it, but the observations also underlined that students have to adjust the content of the interview to meet the case (Good, 1994).

Foucault's implicit labour of language, seeing and knowing, the transformation of symptom into sign, the passage from patient to disease, and from the individual to the conceptual in clinical placement teaching is accomplished through speech that is progressively refined and embodied as well as constantly rehearsed in clinical placements. Clinical placements give students the opportunity to practice verbal communication with patients in the professional environments where they will work once they have qualified. The bauds and bytes of Latour's assembly of competence, or Schön's reframing are achieved through immersive repetition in a form which demands rapid processing and swift responses rather than leisurely reflection because in many, perhaps most circumstances, a doctor's authority is conveyed to patients by her ability to reach a convincing conclusion within the limited time frame of the consultation. This is not to suggest that medicine is intrinsically unreflective, but *pace* Atkinson to underline the obvious point that the predominant focus in clinical placements in explicitly patient-centered medical education, is focused on the consultation with the patient and is therefore subject to its constraints (Atkinson, 1995 p.34). The final summary to the tutor or superior is still further compressed by what Bourdieu suggests we understand as the violence of hierarchy to produce a denser and more encoded form.

Foucault tells us that doctors give speech to what may otherwise be unrecognised, and this chapter has been an attempt to examine how students are initiated into true speech, and how they get a feel for the repertoire and language that informs reflection in action (Schon, 1983 pp.271). This more detailed examination of the implicit labour of language enables an interrogation of Foucault's celebration of the 'spontaneous virtues of description' whereby saying what one sees integrates it spontaneously into knowledge, by showing how that spontaneity is assembled and learned through repetition and the progressive refinement of a particular form of embodied speech that can be traced back to the hierarchy of the profession.

These observations of practice in clinical placements suggest that speech is critical in the developmental process of socialisation, so that although the rotations of an integrated curriculum mean that students may be under less pressure to adhere to the quasi-norms described by Bosk, the implicit labour of language that guides their reasoning carries and imparts, indeed defines the behaviour required of the professional, the 'sense of the

game' or the 'grammatical models of the right way to do things' as described by Bloom, Bourdieu and Kuhn respectively, and it has not changed fundamentally (Bosk, 2003 p.61; Bloom, 1995; Bourdieu, 1992 p.128; Kuhn, 1977). This is because reform centered on the curriculum, and although it included recommendations designed to limit the influence of subject-based/academic departments, *Tomorrow's Doctors* failed to address the 'mode of learning' or the 'apprenticeship nature of training' and did little or nothing to change the relationship between the universities and the honorary clinical staff that deliver the curriculum, or to ensure their responsibility for its delivery, thus inhibiting significant change in the structure of the educational environment (Stacey, 1992 p.113). Whereas much ink has been spilled evaluating the impact of PBL, the most fundamental and significant learning environment in medical education has largely escaped analysis and reform by the regulator.

At the same time as shown in chapter 7, direct attempts to instil professionalism or to encourage 'enquiry and the exploitation of knowledge' have been relatively devalued by their separation from the clinical environment and risk being played out at the level of rhetoric, being 'mastered' rather than appropriated by students, and their modes of assessment may encourage a degree of cynicism and give undergraduates a grounding in how to game the systems of revalidation that they will encounter in professional life (Hafferty, 2007; Habib and Wittek, 2007).

In Bloom's terms therefore these last two chapters have demonstrated how behaviour is formed in the clinical environment, and they vindicate his argument that revisions to the curriculum, including adding courses in the humanities, will not cause any significant change in teaching and learning; for that to happen changes have to be made to the structure and operation of that environment (Bloom, 1995).

11. Conclusion: implications and contribution

This thesis concludes first with a brief discussion of some implications for the teaching of practice in undergraduate clinical placements drawn from the findings: the relationship between the clinic and the academy, changes in clinical practice, and the commodification of learning. Second it considers the conceptual contribution the thesis has made to the field of the sociology of medical education

The clinic and the academy

The gaze has provided a guide to the principles of clinical practice and Foucault's examination of its genesis can also inform an analysis of the tensions between the clinic and the academy. In *The Birth of the Clinic* his central concern was with the elaboration of the 'decisive' and 'concrete' forms of experience characteristic of the clinic and with the factors that impeded its emergence, but he does not pursue the post-revolutionary relationship between the clinic and the university (Foucault, 1994). Nevertheless his account of the role of university training in the emergence of the gaze inspires a 'history of the present' that speaks to the relationship between the clinic and the university. This thesis proposes that Foucault's identification of the role of university training in the eighteenth century alongside that of the state in promulgating the taxonomies that underpinned what he calls 'dogmatic language', has parallels in the current situation (Foucault, 1994 p.68).

The inhibitory effects of the taxonomies of science in the C18th invites comparison with the explicit recognition in *Tomorrow's Doctors* that the organisational and intellectual divisions of the basic sciences in universities that defined the pre-clinical - clinical divide were obstructing course development and change, as well as making it more difficult than it needed to be for students to apply scientific insight to the clinical context (General Medical, 1993, Stacey, 1992). So *Tomorrow's Doctors'* analysis identified the taxonomic mechanisms of dogmatism within the university in the C20th, and that analysis is supported by Schön's observations about universities' reluctance to come to terms with practical competencies and artistry, indicating 'a priori' a significant tension in the relationship between the university and the clinic in the conception and delivery of medical education (Schon, 1983b p.vii). The new curriculum was organised around

clinical conceptions of the body and the evidence presented here shows how the structural and other changes deployed to meet the objectives set by the GMC in *Tomorrow's Doctors* such as the move to PBL delivered by clinicians, and the insertion of clinical placements into the first two years of the course have now produced a medical education which is increasingly dominated by the clinic although, with the demise of the firm, one less dominated by individual clinicians.

That 1993 edition of *Tomorrow's Doctors* also provided evidence of the GMC's reluctance to learn from or confront the effects of clinical autonomy in the educational environment. In particular it failed to consider the implications of the previous attempt to deal with overload which had been derailed by clinicians ignoring graduates' educational needs and using them as an extra pair of hands. This demonstration of the Council's reluctance to confront clinicians' resistance to a curriculum and the demands of medical education in its reforms was also consistent with its unwillingness to question the appropriateness of the existing mode of learning (Stacey 1992 p.113).

That first edition effectively crystallised the intellectual and pedagogic dominance of the clinic, and subsequent history charts a continuing movement away from the principles and practices of the academy towards those of the clinic. Medical schools and their staff and students are distinguished from other university departments not just by their resources, facilities buildings and teaching environments, but also by the commitment required of their students whose lives and accommodation are dominated by their course, and the fact that many of their staff are paid on clinical and not academic scales. Their staff-student ratios are more favourable than other departments, and their courses have resisted modularity. The thesis showed how the attempt to provide scholarly input, to encourage innovation, promote diversity and leaven the undergraduate curriculum by providing doctors with critical skills through SSMs was sacrificed to the demands of the medical curriculum (see Chapter 6 *The core and student selected modules*), but Bloom and Hafferty would argue that adding courses would not influence behaviour unless matching changes occurred in the clinical environment (Hafferty, 2007; Bloom, 1995).

Tomorrow's Doctors' focus on the integration of the curriculum around body systems did succeed in shifting medical education away from a clinical experience centered on the acute sector and dominated by the firm, but as Stacey argued and the evidence

presented here shows, the GMC's failure to reconsider the mode of learning meant that the experience remained tied to the hierarchy of the profession (Stacey, 1992 p.113). The system of rotations dictated by this integrated curriculum did destroy the claustrophobic culture of the single firm, so students are no longer obliged to comply with quasi-norms and tutors explicitly now recognise that their own practice may differ from the norm, and advise students to check up on the approved practices for the purposes of exams (Atkinson, 1997 p.146). Nevertheless although students no longer have to conform to individual consultants' quasi-norms but ostensibly to the practices of patient-centered medicine, practice in clinical placements show that they adjust their speech and adopt a manner appropriate to a restricted code designed to meet the requirements of a hierarchy, where consultants' time is highly valued and brevity a form of respect, another vindication of Bloom's argument about socialisation in the clinical environment.

Despite the successful move to a curriculum organised around clinical preoccupations, and consistent with its blindness to the consequences of clinical autonomy that legitimates considerable variation in educational practice, the regulatory system assumed and continues to assume that it is universities that are responsible for ensuring the maintenance of standards in undergraduate medical education. An example of universities' responsibility without power and of path dependency in medical education was provided in 2007 by the change to the Post Registration House Officer (PRHO) years following graduation when they became the Foundation years (Tooke, 2008). Under the old system graduates would normally serve as PRHOs in the hospitals attached to the school, so with the established lines of communication it was in principle not too difficult for the university to maintain its oversight of their development, but when Foundation doctors were able to move to hospitals throughout the country, their original university remained formally responsible for them despite having no control over or even proximity to the provision. The 'rubber levers' between universities and honorary clinical staff were always the elephant in the room in discussions between GMC visitors and the course team, and there is a risk that universities' continuing managerial impotence means that undergraduate medical education may increasingly become vocational training.

The changing nature of clinical practice

Although the 1995 edition of *Tomorrow's Doctors* calls for an understanding of the roles of other health professionals and a capacity for teamwork, the GMC's hands-off approach to the profession seems to inhibit its capacity to consider the increasingly collaborative nature of healthcare practice Council (General Medical, 1993 p.10). This was noted in the discussion of evidence-based practice in Chapter 4 by Timmermans and Mauck, and *Tomorrow's Doctors* was predicated on a model of 'the 'personally expert sovereign physician' who is 'autonomous, independent and authoritative', described by Lucey as a 'self-contained clinical microsystem, accountable for devising his or her own unique processes to care for patients and for continuously refreshing knowledge and skills'; much like Freidson's or Foucault's conception of the medical practitioner (Lucey, 2013 p.1639; Timmermans and Mauck, 2005). The dominant model for practice in clinical placements remains the individual clinical encounter at the bedside or in the surgery, and the pressure for individual accountability and indeed patient-centeredness has been reinforced by successive scandals, despite the growing recognition that NHS 'culture of fear' needs to change (Lucey, 2013p.1639; Berwick, 2013; Inquiry, 2013).

By 2009 under the heading of professional skills, *Tomorrow's Doctors* included a sub-section 'Learn and work effectively within a multi-professional team' and the introduction of a 'shadowing' period just before graduation was a step forward, although its chief purpose is to ease the transition to the Foundation years where graduates continue to be subalterns, referred to in the work environment as 'junior doctors'. The school's attempts to introduce collaborative practice was briefly successful, but its demise illustrated the difficulties of seeding changes that challenge the status quo. It pioneered a medical rehabilitation ward where students worked with nursing and social service staff for 2 weeks, but although students rated the experience highly, an evaluation showed no difference between staff ratings of Foundation level doctors who had the experience and those that had not, and after three years it foundered due to a lack of staff support and resource for an increased number of students (McGettigan and McKendree, 2015). The school also ran quality improvement projects where students collaborated in their clinical placement groups, but due to considerable variation in the quality of clinical supervision their experiences differed widely, and as already noted in the discussion of EBM if

activities are not integrated into daily clinical work they are less likely to lead to change (see chapter 4 *Embedding evidence-based practice*), (Lucey, 2013 p.640). The evidence from this school and elsewhere of curricular interventions to encourage collaborative working is that, as Bloom argues, they are unlikely to change behaviour unless inter-professional or inter-specialty communication is incorporated into the clinical environment (Bloom, 1995).

In the observations the challenges of collaborative working across specialties could be glimpsed in the comments made by the cardiologist who stressed the differences between her specialty and others and the technician who echoed her sentiments, and in a nephrologist's criticism of GPs who apparently ignored specialists' advice not to use common drugs that affect the renal system for the treatment of the urinary tract, and Thistlethwaite's review of inter-professional education notes that disparaging remarks about other professionals do not reinforce an inter-professional message (HeY3), (HnY5), (Thistlethwaite, 2012 p.65). Students' reactions to the simulation showed how uncomfortable they were in a pressured situation that required teamwork, and the assessment system is ill-designed to test or reward collaborative skills or potential, geared as it is to the production of clinically competent individuals to be ranked in percentiles, ready to function as foundation doctors (Lucey, 2013 p.1639), (and see the next section *The commodification of learning*). The observations also showed how practice reproduced hierarchy and how it modelled a robust discourse between students and tutors equally ill-designed to encourage collaboration.

The literature showed that Bosk's quasi-norms were associated with different specialty groups and the sources on surgery indicated a distinct modus operandi as well as a rather rigid authority structure (Bosk, 2003; Bhandari et al., 2003). The undergraduate curriculum is not designed to practise 'collaboration entanglement' or to model the distributed agency that Goodwin describes, or to enhance understanding of how different specialties can be brought together to cope with the co-morbidities characteristic of much patient care (McDougall et al., 2016 p.108; Goodwin, 2009 p.169).

The commodification of learning

A five-year course represents a considerable investment in both time and money, and increasingly that investment plays a part in all students' approaches to their education, and with a year's intercalation medical degrees are twice as expensive as most undergraduate degrees. Lave and Wenger use a notion of the commoditisation of learning to refer to the 'fundamental contradiction between the use and exchange values of the outcome of learning', and it is worth applying their distinction to re-visit aspects of the ubiquity of assessment in the undergraduate curriculum (Lave, 1991 p.112).

Testing, Lave and Wenger say

> *'is perhaps the most pervasive and salient example of a way of establishing the exchange-value of knowledge … a new parasitic practice, the goal of which is to increase the exchange value of learning independently of its use value.'* (Lave, 1991 p.112)

Chapter 7 examined the assessment of professional attitudes in the context of the overall diet of assessment in the course, and showed that it often lacked the apparatuses of moderation and external examination that are applied elsewhere. It argued that portfolios and records of achievement were mastered rather than appropriated by students and that this could lead to a degree of cynicism about their later use in appraisal and revalidation in professional life because they provided experience of how to game data and goals (Berwick, 2013 p.9). Tutors' advice to students to check on the 'approved' ways of carrying out certain procedures as well as an obsession with assessment reinforced by the frequency and sheer quantity of assessment devices and points, testify to a widespread focus on the exchange-value of learning in undergraduate medical education, echoing *Tomorrow's Doctors* original concern about medical students' tendency to work to tests (General Medical, 1993).

Tomorrow's Doctors adoption of behavioural verbs as the bridge between outcomes and assessment and its insistence on clarity and on the assessment of the individual, favour transactional bounded conceptions of competence and they combine with a professional reliance on scales and measurement (General Medical, 2002). This cascade has fuelled a substantial academic industry devoted to the practice, and less often the principles of

assessment in medical education, (Lambert W et al., 2012). Evidence from the construction of portfolios and Records of Achievement showed how difficult it was to avoid reductionism in the assessment of students' development of professional skills and values, and their skills in assessing their own strengths and weaknesses. The system of rotations militated against continuity of judgement, students failed to show their RoAs to new supervisors, and supervisors were reluctant to condemn students with whom they had only fleeting acquaintance. The evidence showed that the assessment of professional attitudes and skills was compromised, and the literature suggested that reciprocal evaluation between staff and students exacerbated a regression to the mean and added to tutors' fears about failing students.

This suggests that a curriculum that continues to be overloaded and an assessment system designed to reward fluency and recall, favours surface learning strategies that propel students towards prioritising exchange value over use value, and the extra difficulties of assessing professional attitudes and values make it relatively simple for students to manipulate the system to avoid anything but a superficial engagement with the self-critical and reflective processes that are essential to an effective system of care. A system that evolved from a determination to standardise undergraduate medical education may struggle to inculcate those qualities in the doctors of tomorrow. Indeed it is arguable that students' assignment to quartiles that limit their employment choices encourages them to see themselves as commodities

It is reasonable to suggest that the dismissive terms applied to patients recounted by Becker and Mizrahi (see chapter 10) are partly a consequence of the pressure of time that forces students and doctors to adopt instrumental attitudes to learning and perhaps treatment too. It may be intuitively appealing to see doctors being used by the words they employ, but a sociological approach should examine the conditions of their production and reception and the patterns of education and communication (Bourdieu, 1990 p.56; Kuhn, 1977 p.xiv). The apparatuses of assessment in medical education and mid-career revalidation and the protocols that surround and sometimes constitute treatment push students and doctors towards a concern with ticking boxes to ensure progression and to cover themselves. These procedures themselves are based on the assumption of the doctor as a self-contained clinical microsystem, they cannot capture the more elusive characteristics of care, in particular the collaborative nature of modern

patient-centered medicine, and arguably they inhibit creative and reflective approaches to treatment.

Implications for undergraduate medical education

The *Birth of the Clinic* shows there's nothing new about the conflict between the university and the clinic (Foucault, 1994). Foucault's argument is that the clinical gaze could only emerge once the inhibiting factors of the dogmatism of the academy and the conceptions fostered by the state had been overcome. This thesis suggests that the clinic has now achieved such a degree of dominance over the undergraduate curriculum as to raise questions about the proper configuration for the regulation and delivery of undergraduate medical education to meet the challenges of modern healthcare systems.

It is unrealistic to contemplate a divorce between medical education and the university, but sensible to consider how power and responsibility might be more effectively distributed between universities and the NHS. To do so properly would require a fundamental re-examination of the purposes of the undergraduate degree coupled with a recognition of the changes in practices in healthcare and a willingness to reconsider the mode of learning. The evidence presented here indicates that undergraduate medical education succeeds in preparing students to function in the system as a subordinate member of a hierarchical profession, accustomed to being subject to metrics in a healthcare sector itself increasingly driven by targets.

The enquiries into the scandals which have driven reform in the past now explicitly invoke the culture of fear in the health service, and the GMC has recently begun to assess the extent of bullying in the profession, but little has been done to address the practices that create this situation (Council, 2016; Inquiry, 2013; Berwick, 2013). Unsurprisingly a profession that is epistemically grounded in individuality finds it difficult to move from conceptions of individual behaviour to an examination of communities of practice. The GMC's suggestion that 'less hierarchical relationships' should be encouraged ignores how these relationships are constructed, maintained and embedded both in education and everyday practice (GMC, 2015a p.4). The responses to the crises in healthcare have led to an increasing emphasis on patient safety that has been reflected in *Tomorrow's Doctors*' priorities, and they often take the form of protocols that standardise practice in

the pursuit of compliance rather than any rethinking of how students are taught to practise (Inquiry, 2013).

Like many institutions the assessment systems that are applied in both universities and the NHS are predicated on an assumption of individual accountability, and the few studies on graduates' multi-disciplinary teamworking indicate their unpreparedness (Monrouxe et al., 2014 p.6). It may be that the balance and content of the curriculum should be altered further to ensure that students have more and earlier experience of collaborative working, and that suitable ways of assessing collaborative performance are devised: certainly the school's training ward experiment showed that professional training placements could be constructed in a clinical setting without affecting care (McGettigan and McKendree, 2015).

Tomorrow's Doctors was designed to produce PRHO, later Foundation doctors and its history shows how long term professional needs were sacrificed to this short-term aim. The evidence from *Tomorrow's Doctors* is that change to the mode of learning or to the relationship between the university and the NHS would be difficult to achieve without threatening the clinical autonomy that is rooted in clinical practice. It is hard to see how the reforms needed to furnish the intellectual and critical skills that underpin 'the long term intellectual and attitudinal demands of professional life' might be achieved whilst universities remain subordinated to the GMC's prescriptions and unable to exercise sufficient control over the delivery of undergraduate education by honorary clinical staff (General Medical, 1993 p.7). However the GMC is now responsible for the undergraduate and postgraduate phases of the first seven years of medical education and in a position to develop a radical reappraisal that would allow a reconsideration of the relationship between the universities and the profession to rebalance the provision, respond to the changing nature of healthcare, and produce doctors schooled in the intellectual and critical skills to continue to innovate and adapt throughout their careers.

Contribution to the field

This thesis has contributed to the understanding of clinical placements in undergraduate medical education by following the assembly of clinical practice in the context of the GMC's reforms expressed in *Tomorrow's Doctors.* It capitalised on the peculiar

circumstances of UK undergraduate medical education at the end of the C20th and the beginning of the C21st and the author's participation in the creation of a new school. It offers an extended case study that encompasses the making and development both of the GMC's reforms and the school, the better to 'highlight the stabilising mechanisms' and to 'distinguish between the two tasks of deployment and unification' suggested by Latour, through exploiting the opportunities for tracing the mechanisms and modifications that precede, accompany and assemble black boxing (Latour, 2005 p.261; Burawoy, 1998 p.5). It uses what Fox terms 'new materialist perspectives' but has not, as he suggests these perspectives do, turned away from a textual or linguistic focus but has selected some concepts and methods drawn from those perspectives and rejected others, to concentrate on the forms and assembly of texts and speech as well as their content (Fox, 2016). Neither has it turned away from what he terms the 'narrow confines of Foucauldian concepts', instead recruiting the gaze and the labour of language in particular, as frameworks for understanding the interaction between students, patients and tutors, and finding parallels with modern day reforms in Foucault's account of the role of universities in the emergence of the clinical gaze (Fox, 2016 p.63). In common with recent ethnographic work on health and learning it has avoided notions of social structure, culture, identity, systems or deep underlying mechanisms as explanations, preferring to decentre individuals to focus on communities of practice (Prentice, 2013; Baert and Silva, 2010 p.70; Goodwin, 2009; Mesman, 2008; Lave, 1991). It argues that the observation of practice allows the capture of the embodied nature of the performance of communication and other clinical skills, as well as a dissection of Foucault's account of the gaze and the spontaneous virtues of description.

These perspectives have been combined with historiographic and ethnographic methods to trace the association between the global and the local and to explore the relationships between ideas and processes that Latour sees as ANT's contribution to tracing the material network of the metrological chain (Latour, 2005 p.229). In medical practice science is mediated by the peculiarities of individual bodies, and the resulting processes of clinical inference legitimate the individual ways of thinking and doing that characterise the profession and have been traced through to interactions in placements and in assessment regulations (Latour, 2005; Bosk, 2003; Freidson, 1970), (Chapters 5 and 7). The thesis shows how the chains or relationships in the material network flow through institutions and practices to compose clinical placements, using Latour's notion of

mediation to trace the construction, modification and use of texts, to distinguish between private and public clinical skills, the articulation of knowledge and information, and the use and significance of scripts and inscription devices as well as the relationships between the institutions in the network that produces them (See Chapters 8, 9, 10).

The thesis traced the implications of the remedies for the problems identified in the first edition of *Tomorrow's Doctors* through a theoretically informed examination of their consequences. It has shown how standardisation, as well as the attempts to offset its consequences have affected course content and assessment. It demonstrated how a core curriculum integrated around body systems designed to provide the essential components for a newly qualified doctor contributed to the reconfiguration of the system of apprenticeship but also encouraged 'silo' thinking on the part of students who become accustomed to the 'tramlines' of the curriculum. The simulation sessions underlined how third year students had become accustomed to practice at the bedside or in the surgery and their discomfort in a less predictable situation. It is this discomfort that underlies students' reluctance to expose themselves to the more challenging real life confusion of A&E or AAU. The move to a curriculum defined by outcomes and an increased concern with individual accountability also furnished the foundations for a comparatively reductive system of assessment that encouraged an instrumental approach which finds echoes in a more protocol-driven health service.

The extended case method that takes context as a point of departure has shown not only how *Tomorrow's Doctors* itself contributed directly to clinical placements but also how processes of curriculum delivery and assessment impinge on students' approaches to different aspects of the practices they encounter there. The analysis as Bloom suggests, looks beyond the curriculum but it also deconstructs behaviour in the clinical environment to show how students are socialised into the profession and it has demonstrated the unintended consequences of what Hafferty calls the 'social movements' of EBM and professionalism.

This examination of the assembly of clinical practice has shown that although ethnographic approaches have been and continue to be essential to understanding its operation in clinical placements, a more comprehensive and nuanced picture is obtained through decentering the student and demonstrating that what was seen as context in

previous work is better perceived as ‘reality itself’ (Burawoy, 1998 p.13). A comprehensive understanding of change in undergraduate medical education and if Kuhn was right, to medicine itself, demands approaches capable of discerning the implications for medical practice of the relationships between processes at a number of different levels across institutional boundaries.

How doctors learn to think and to practice in this first and critical phase of their education demands a sociology of associations that can trace the relationships between supervision, timetabling and assessment, between medical schools, universities and the NHS, where clinical relevance has a powerful legitimating influence. This holistic view of the sociology of medical education contributes to the sociology of knowledge and of the professions, as well as to the discussion of how undergraduate medical education may be made more responsive to the changing demands of contemporary healthcare.

Appendix: Assessment (2008)

Years 1 and 2 **Formative assessment**					
Component	***When***	***What***	***Who***	***How***	
PBL	Weekly	Attendance PBL Process	PBL Facilitator	Feedback Oral	
	End of block	Student's contribution to group working processes	PBL Facilitator	Feedback Oral	
Mock Integrated Medical Science Papers	Jan. Apr	Theme clusters		written papers	as for summative papers
Portfolio Personal Portfolio	continuous	Awareness of own development, capable if discussing failure and fears, giving and receiving constructive criticism to guide development	PBL Facilitator	discussion, reflective writing feedback forms, other	

Year 3 formative				
Component	***When***	***What***	***Who***	***How***
OSLER	End of each block	Report and discussion with student	Clinical teachers	Co-signed form
clinical assessment of 2 patients (see regs)	End of each block	report	Clinical teachers	Formative
Consultation records	Each week	4 consult ation records assessed	Clinical teachers	
Educational prescription	End of each block		Clinical teachers	
Critically Appraised Topic CAT Report and reflection on CAT	2nd and 4th End of each block	Research on a particular patient issue	Clinical teachers	Formative
Report on progress	Each SSC		SSC supervisor	
H&S Training	Autumn terms	Monitored		attendance
Portfolio/ RoA	December and April	Clinical teachers PBL tutors	Development of professional behaviour and values and	Observation of performance during clinical attachments.

	May		developing skills of self-assessment. Development of learning plans.	Completion of student workbook in Study guide. 1500 word final essay and discussion. See CoP Appendix 8 Educational prescription

Year 4 formative and summative				
Component	***When***	***What***	***Who***	***How***
		Satisfactory Attendance (normally 80%) and performance in the core		
OSLER	End of each block	Report and discussion with student	Clinical teachers	Co-signed form
2 written Integrated Theory of Practice Papers	July/August	7 HYMS Themes under 3 cognate theme clusters Cluster A Themes 1 and 2: Life Sciences, Clinical Sciences Cluster B Themes 3 and 5: Clinical Techniques and	HYMS staff	Written examination

		Skills, Person Centered Care. Cluster C Themes 4,6 and 7: Evidence-based decision-making, population health and medicine, managing resources for quality and efficiency		
Intermediate Clinical Practice Examination	July/August	50 minutes on 2 patients. Observation of the taking of a focussed history, the identification of the most important possible causes of the presenting problem, the most appropriate examination, findings, underlying mechanisms	2 pairs of examiners. Clinical staff	2 part written examination
Portfolio/RoA	December and April May	Development of professional behaviour and values and developing skills of self-assessment. Development of learning plans.	Clinical teachers PBL tutors	Observation of performance during clinical attachments. Completion of student workbook in Study guide.

				1500 word final essay and discussion. Educational prescription
Attendance 80% at Clinical Placement, Clinical skills	continuous		CP, CSL and PBL tutors	Registers
Mock integrated Theory of Practice Paper	Stem and 4-6 sub-questions relating to curriculum themes testing a broad range of curriculum objectives through patient management problems. Including Phase I material	Scoring group of 2/3 staff	Modified standardised essay format	Core marks for each question: 20

Year 5 summative				
Component	***When***	***What***	***Who***	***How***
Objective Structured Clinical Examination	May	High level communication skills with simulated patients, assessment of practical procedures, emergency simulations	Examiners	By direct observation

Proficiency in CPR and a prescribing exercise	May			By direct observation
Final Clinical Practice Examination	May	2 patients, different examiners. History taking and interpretation, appropriate examination: completion of problem list and management plan and its presentation to the patient	4 pairs of examiners	By direct observation
Portfolio/RoA	December and April May	Development of professional behaviour and values and developing skills of self-assessment. Development of learning plans.	Clinical teachers PBL tutors	Observation of performance during clinical attachments. Completion of student workbook in Study guide. 1500 word final essay and discussion.

				See CoP Appendix 8 Educational prescription

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