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Radiographers' perspectives on their changing roles and some implications for their pre-service education in Wales: a study of three departments

A thesis submitted to the University of Wales Cardiff in fulfilment of the requirements of candidature for the degree of PhD

2005

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Abstract

This study undertakes a comparative study across three different settings in South Wales of the factors influencing radiographer's roles and 'role development', the general and specialist skills required of them, their attitudes toward radiography education and its outputs, predominantly at undergraduate level and changes, if any, which these matters imply might appropriately be made to the radiography curriculum. A brief history of radiography provides a background to exploration of current patterns of their work and 'role development'. These are set in the context of the changing character of professions within a public service increasingly intent on intensifying and flexiblising labour processes. Given the conceptually and methodologically limited character of existing work in the field, a variety of methodological approaches drawn from a wide range of occupational studies were considered and a number of scales of investigation considered before formulating a simple typology for distinguishing radiology departments of different size and structure. This was used as a basis for selecting three contrasting sites in South Wales where data was collected initially from 44 radiographers and managers by questionnaire (prefaced by focus groups) concerning their biographies, current work and its context and their opinions as to the radiography undergraduate curriculum and the graduates that it produced. This first phase enabled identification of informants for a second, interview phase of the study. A number of themes were identified and provide the framework for the narrative presentation of findings. General radiography is seen to be giving way to increasing specialisation in a context of prolonged shortage of both radiographic and radiological staff and clinically driven technological change. Radiologists were identified as pivotal in facilitating or hindering the extent and shape of changing radiographers' work and the right to report upon procedures as central to their respective power and control. Size, range of operations, radiologists' inclinations and the staff structures and cultures which they engendered differed across departments. Impending change entailed by the requirements of *Agenda for Change qua* altered grading criteria, pressure for skill-mixing and the introduction of a four tier structure were received with scepticism, considered more as threats than opportunities. While advanced practitioner roles were

embraced, informants were both relatively uninformed and sceptical of the feasibility of consultant practitioner roles and almost universally unwilling to accept assistant practitioners on both clinical and political-professional grounds. Respondents across three settings evinced different attitudes to and experience of student radiographers and graduates. While undergraduate programmes were generally held to be adequate, they were seen not to afford sufficient practical experience for students,. Yet graduates were, in the main, considered to be performing satisfactorily.

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This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

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Date ..... 21.9.05 .....

STATEMENT 1

This thesis is the result of my own investigations, except where otherwise stated.

Other sources are acknowledged by footnotes giving explicit references. A biography is appended.

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Abbreviations

A & E	Accident and Emergency
BP	Blood pressure
COR	College of Radiographers
CPD	Continuing Professional Development
CPSM	Council for Professions Supplementary to Medicine
CR	Computed radiography
CT	Computed tomography
DGH	District General Hospital
DMU	Diploma in Medical Ultrasound
DoH	Department of Health
DVI	Digital Vascular Imaging
HPC	Health Professions Council
IR(ME)R	Ionising Radiation Medical Exposure Regulations
IV	Intra venous
IVP	Intravenous pyelogram
IVU	Intravenous urogram
JVC	Joint Validation Committee
MRI	Magnetic resonance imaging
NETRHA	North East Thames Regional Health Authority
NHS	National Health Service
NICE	National Institute for Clinical Excellence
QAA	Quality Assurance Agency
QAAHE	Quality Assurance Agency for Higher Education
PACS	Picture archive and communication system
RadIS/ RIS	Radiology Information Systems
RNI	Radio nuclide imaging
SPR	Specialist registrar

Transcript conventions

All tape-recorded material has been transcribed verbatim.

... The speaker paused briefly

[...] words, phrases or sentences have been omitted form the text

( ) descriptive material has been added to clarify meaning

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Part One

Chapter One

Introduction: facing change

Most people at some time will have had an x-ray or some form of imaging procedure performed by a diagnostic radiographer. Many may have mistakenly believed the person taking their x-ray or performing their scan to be a nurse, technician or doctor. Diagnostic radiographers, unlike some other health professionals, such as physiotherapists, nurses and doctors, rarely appear in popular media and, as a result, do not have a high profile. They are frequently confused with other health care staff with similar names but very different roles, such as radiologists, radiotherapists and therapeutic radiographers. *A Curriculum Framework for Radiography* (College of Radiographers, 2003a: 14) described diagnostic radiographers as,

> 'Being responsible for providing safe and accurate imaging examinations in a wide range of clinical environments, using a variety of imaging modalities and techniques so that appropriate management and treatment of patients and clients can proceed. The identification, evaluation and monitoring of systematic diseases, skeletal and soft tissue abnormalities and trauma are the major focus of diagnostic radiography'.

Radiographers' roles have changed considerably over the years and continue to do so. Paterson (1996: 26) quoted a previous editor of *Radiography* as saying 'I sometimes wonder whether there are many vocations which show such variations from one decade to another as does that of the radiographer'. Professional boundaries have continued to blur, influenced by policy agendas of *The NHS Plan. A Plan for Investment. A Plan for Reform.* (Department of Health, 2000a) and *Meeting the Challenge. A Strategy for the Allied Health Professions* (Department of Health, 2000b). However, anticipated changes in what are referred to as 'skill mix', 'role development', 'role extension', as well as the introduction of a four tier structure, have been slower than anticipated and have appeared patchily. A

shortage of radiographers and radiologists, combined with increased volumes and complexity in radiological examinations, specifically in specialist areas, such as computed tomography (CT), magnetic resonance imaging (MRI) and ultrasound, have influenced radiographers' practices. Uneven change in the content and pattern of their roles, anticipated by Paterson (1994a) and Price et al (1997), has continued to be palpable. While Richards (2003) noted that the success of any skill mix programme involving radiographers and requiring the support of radiologists would depend critically on the commitment of both it has, in some respects, been questionable. Without such conditional support among the workforce changes of any magnitude, as among teachers or nurses, are bound to prove very difficult to instigate and sustain.

The decision to undertake this study was prompted by my work as a radiography education provider during the period when pre-service provision has moved from diploma to degree structures. It seemed to become increasingly obvious to me that changes taking place in clinical practice were in danger of not being addressed appropriately in such initial preparation. The culture and ethos of previous pre-service diploma courses were still tending unduly to influence content and delivery of undergraduate programmes. In the light of the degree of change and uncertainty surrounding radiographers' practices it seemed desirable to ensure that those developing current and future radiography programmes were made as fully aware as possible of the requirements of those delivering radiography services. Ensuring that new graduates are equipped with appropriate skills and understanding would seem prerequisite to their entry to positions characterised either by 'skill mix' or any other set of professional arrangements.

This thesis seeks to reflect the development of my study from preliminary methodological and hypothetical considerations to its conclusion. Like most doctoral investigations its scale and character changed somewhat during the overly long period (seven years) that it has taken to produce. At the very beginning I thought that it could grow directly out of earlier work in the field. However, early inspection of the literature convinced me both of the general thinness of existing analyses of radiographers' beliefs and practices and its' specific over-attention to rather

mechanistic forms of job analysis. These issues are further explored in the remainder of Part One. For some considerable time, I felt compelled to pursue a survey design that involved large numbers of departments and individual radiographers across variety of NHS locations, in both England and Wales. The very complexity of establishing baseline information on the scope and variety of radiography services across regions was both fascinating and appealing. This led to the two stage empirical investigation whose rationale is laid out in Chapter Four. What became increasingly obvious was that the possible range of radiographers' roles and tasks depended in complex ways on the character of the departments in which they were located, the latter varying, *inter alia,* by size, range of speciality, generality, employment and deployment policies, degree of dominance by radiologists, culture and climate. Moreover, if departments were varied places in which to work, so too were they very different locations in which undergraduate trainees underwent placements. Presumably, such variations would also tend to render departments differentially receptive to the central policy thrust crystallised in the four-tier service delivery model enshrined in the Department of Health (2003a) *Radiography Skills Mix*. Moreover, it was not possible to miss the antipathy in Wales or, at best, the very conditional acceptance of this new dispensation and, in particular, the possible meaning of introducing a new style of radiography assistant. I was well aware from my everyday professional interaction with radiographers in their workplaces of the Janus-faced nature of their feelings: radiologists ruled them and, for many, this was a source of injustice and unwelcome restraint yet, in turn, they must retain firm control of their assistants.

The intended workforce restructuring which radiographers were prospecting was far from unique though, as with other occupational groups undergoing similar processes of change, it had its peculiarities. For example, teachers, long poorly supported both in and out of classrooms, had recently split acrimoniously on professional associational lines about receiving augmented and more empowered forms of 'assistance'. They were also less than enthusiastic about performance pay, particularly when related to pupil achievement. Nurses have been more and maybe, on some accounts, too willing to leave the everyday business of the ward to unqualified labour, embracing more hands-off, managerial versions of their role.

Such public service workforce restructuring has been driven by increasing consumer demand for labour-intensive services in a public sphere marked by intense competition for resources. I should have been more aware of the parallels and lessons afforded by such struggles for conceptualising change in radiography earlier in my study. As it was, I came to full awareness of such issues relatively late in the progress of my work and only rather weakly allude to them in discussions of my findings.

The heart of my study, presented in Chapters Four to Seven came to form an investigation, using predominately questionnaire and interview methods, of three contrasted departments in a contiguous area in South East Wales. This represented the fact that I had come to the view that my aims would be best served by gathering information in some depth on a small number of case study sites that 'stood for' some of the sorts of crucial aspects of differences between radiography departments outlined above. The character of Departments A, B and C is detailed in Chapter Four, analysis of the information gleaned from individuals within them is presented in Chapters Five to Seven and my concluding remarks in Chapter Eight, are constructed around them.

Any researcher undertaking essentially qualitative work, as I did, is well served by making their foreshadowed problems and tacit hypotheses as explicit as they possibly can. My research aims were to undertake a comparative study across three different settings in South Wales of the:

i) factors influencing radiographer's roles and 'role development';
ii) general and specialists skills required by radiographers;
iii) attitudes of radiographers regarding radiography education at under- and post-graduate levels; and
iv) changes, if any, which these matters implied might appropriately be made to the radiography curriculum

I saw myself as exploring influences that I knew existed commonsensically between departments. I knew that I would need to disentangle colleague practitioners'

insecurities both about the boundary marking behaviours of radiologists and their fear of having function usurped by less skilled and qualified newcomers from the realities of their practices in particular contexts. I also had to contend with the knowledge that many of them held rather denigratory views of current educational practice without necessarily being particularly expert as to its detail. Nevertheless, my personal relations with those with whom I dealt were open and cordial. I encountered real interest in and willingness to help with my endeavours, maybe not least because I had been a familiar face for long enough on placement and link activities to be regarded as having lived with and through changes both in practice and governance that seemed to have become endemic. I reflect in Chapter Four on the advantages and dangers of researching in contexts where one is already known.

The next two Chapters seek to outline what might be of use in the existing literature on radiographers' work and how my reading of it influenced my research design, against a brief historic account of the emergence of the current services.

Chapter Two

Historical Perspectives

This chapter serves to provide a brief history of the forms of radiography and radiography education that constituted the background to the study.

Early days: emphasis on technical and decision making skills

Roentgen discovered x-rays in 1895, producing an image of his wife's hand which required an exposure time of several hours. Radiography has evolved from these primitive images, diagnostic radiographers now utilising ionising radiation in the form of x and Gamma rays, ultrasound and magnetic resonance imaging (MRI) techniques to produce images from which an accurate diagnosis can be made. Individuals referring patients for imaging or x-ray examinations are called 'referrers' under the Ionising Radiation (Medical Exposure) Regulations 2000 (Department of Health 2000c). Referrers are registered medical or dental practitioners or other health professionals, such as nurse practitioners, where a local agreement has been made. While medical or dental practitioners have the authority to demand that an examination is performed, it has become common practice for radiographers to question these decisions and refer the matter back to clinicians or radiologists, refusing to undertake examinations if they feel the original request to be inappropriate.

While requests specify the examinations required, radiographers are responsible for interpreting the information supplied and performing those most suitable, adapting standard techniques and exposure factors to best demonstrate suspected pathology. They have to select, understand, monitor and operate highly sophisticated equipment competently and safely, recording images produced in the most appropriate modality. After viewing images they decide if further projections are to be performed and may suggest to referring medical practitioners or radiologists that alternative examinations are necessary or that the condition

demonstrated requires urgent attention. In this way they act on their own initiative and are expected to display appropriate decision making, reflective and problem solving skills particularly as they frequently work alone and under pressure to produce high quality images in the shortest time possible, with sole responsibility for patients' well-being. The tasks that they undertake are continuously changing to accommodate new techniques. In some areas they are required to provide written reports or comments on the pathologies demonstrated. In 2002 there were approximately 10,000 radiographers in the NHS in the UK.

Radiologists are qualified medical practitioners who have specialised in the interpretation of images, diagnostic imaging and undertaking associated interventional techniques. It takes a minimum of seven years to train as radiologists after leaving medical school. The role of clinical radiologists has undergone significant change during the last 25 years (Board of the Faculty of Clinical Radiology, Royal College of Radiologists, 2002). Consultants account for 74% of the 2,400 radiologists in the NHS in England and Wales while 68% of examinations undertaken in imaging departments are general x-ray procedures, 17% involving ultrasound. The remainder of the workload is composed of specialist examinations and treatments, such as interventional techniques, computed tomography and magnetic resonance imaging, nuclear medicine. The Clinical Benchmarking Company (2001) found an increase in overall numbers of examinations performed in departments of diagnostic imaging, year on year. Most of the increase occurred in computerised tomography, ultrasound and magnetic resonance imaging. These specialist techniques are time consuming and require direct involvement of radiologists in determine imaging protocols, undertaking or supervising procedures and reporting on images produced (Royal College of Radiologists, 2000). The Royal College of Radiologists (1999) identified a severe shortage of radiologists in relation to workload and in 2001 a review of their individual workloads by the Clinical Radiology Regional Chairmen's Committee Survey indicated that the number of patient examinations per whole time equivalent (wte) could be 34,000 for some radiologists, while the average workload approximated 20,000. The Royal College of Radiologists (1999) recommended that the numbers should range between 4,000 and 14,000 examinations per year.

The Audit Commission (2002) reported that the number of radiological examinations had increased by 2% a year since 1997. Some of the biggest increases had been in complex examinations, such as CT, which had increased by 40% since 1996-7 and MRI, which had seen an increase of 60% during the same period. Increasingly patients and referring clinicians required a 24 hour radiology service, a move away from the traditional 9-5 operation with minimal out of hours on-call cover. Growing sub specialisation by radiographers and radiologists made it increasingly difficult for managers to provide staff for rotas and reporting (ibid).

The increasing workload, specialisation and general shortage of radiologists has resulted in radiographers performing tasks and examinations previously performed only by them, such as barium enemas, barium meals, image reporting, intravenous urography, cystography and injecting contrast agents and radio isotopes. These changes in radiographic responsibilities have been facilitated by increasing the number of assistants and helpers performing non-radiographic tasks, such as involvement with processing equipment, chaperoning and preparing patients for imaging examinations. The total number of helpers used to support radiographers and radiologists increased by 46% between the mid 1990s and 2001 from 893 to 1307, whole time equivalent (Audit Commission, 2002). The Audit Commission's 2000-01 survey found that departments which had most extended the roles of radiographers also had the highest numbers of helpers, though it did not distinguish between them and assistant practitioners who, in some imaging departments undertook simple radiographic examinations. In order to attract and retain suitable staff the Audit Commission (ibid) concluded that there needed to be action at national level in the continuing professional development for radiographers, enabling them to extend their roles, as well as accredited education programmes for helpers. While some radiologists have been reluctant to give up some aspects of their roles, a similar debate is currently taking place among radiographers about relinquishing or delegating tasks that they have hitherto performed to helpers and assistants.

Patient Care Skills

The Department of Health and Central Office of Information (1992:3) stated that 'radiography is a caring profession which calls for considerable technical expertise'. While technical skills remain paramount, diagnostic radiographers develop practical working relationships with each patient within a short space of time (Casseiden, 1988) and aim to display accurate perceptions of patients, empathy and appropriate interpersonal skills. They typically examine an extremely diverse range of patients of differing age, size, psychological and physical condition presenting with a variety of illnesses, attitudes and behaviour and become involved in communicating with them, their relatives and other members of the healthcare team. Patient well being is frequently their sole responsibility, requiring them to be able to react appropriately to changes in their conditions, observing specific procedures for infectious patients, those who are immuno-compromised and those undergoing examinations requiring septic (sterile) procedures to ensure that potential for cross infection is kept to a minimum. Radiographers are also responsible for the safety both of other staff and members of the public, given the potential adverse effects of ionising radiation, contrast agents and toxic fumes and the manipulation of equipment and of responding appropriately to a range of emergency situations. The work involves on-call commitments, including examining casualties single–handed and medical or surgical emergencies both in operating theatres and wards. It requires flexible working practices to produce comprehensive and relevant examinations that give equal weighting to patients' psychological and physical welfare.

Radiography Education: from diploma to degree

In 1921 the Society of Radiographers became responsible for students' radiography training and examinations. The first Schools of Radiography evolved from x-ray departments and were run by superintendent radiographers. The Society of Radiographers encouraged their formal division from education centres and by the 1970's there were over 100 Schools of Radiography offering a two-year course that led to the award of Diploma of the Society of Radiographers. The course

required that students were examined in three subjects after the first year of training: Anatomy and Physiology; Physics; and Care of the Patient and Hospital Practice. At the end of the second year, Part Two examinations were conducted in Radiographic Technique, Equipment and Photography. There was no formal assessment of students' clinical abilities, though supervising radiographers were required to sign individuals' log books indicating that they had been observed performing a range of examinations either assisted or unaided, 1000 of which were required, in total. Students were also required to undertake a range of what were termed 'nursing activities', spending some time in a hospital ward. Log books were presented at a thirty minute viva-voce which formed part of the qualifying examination. Since no guidance was provided, the level of questioning and content of vivas varied between examiners. Most the Schools of Radiography developed their own assessment of affective behaviour, defined as communication and interpersonal skills, which did not contribute to the award of the Society of Radiographers diploma. In 1976 the Society devolved its activities to a College which focussed on education and professional issues while it concerned itself with industrial relation matters. The two-year diploma course was extended to three years in 1979 to allow for the introduction of additional techniques and examinations.

By 1987, the College had decided that its monopoly should cease and Schools of Radiography were urged to begin local curriculum development, in collaboration with higher education centres, for future degree courses. The College of Radiographers (1990) described the diploma course as didactic, authoritarian and based on an inflexible model, with assessment and evaluation procedures which were knowledge and theory based, remote from clinical practice. It was also criticised for not making provision for personal development. In 1989 the first two degree courses were started and, within four years, radiography training had become all-graduate. It was widely felt that degree courses would attract more students and promote integration of subjects, specifically encouraging application of theoretical knowledge to practice deemed to be unduly lacking in the diploma courses that they would supersede. All degree courses were validated by the College of Radiographers and the Radiographers Board of the Council for Professions Supplementary to Medicine (CPSM) through a Joint Validation

Committee (JVC). In 2003 the Health Professions Council replaced the CPSM. The Joint Validation Committee has now ceased to exist and, while it is a requirement that the HPC validates all radiography undergraduate programmes, most validation panels also include College of Radiographers representation.

The College of Radiographers ended its activities as an examining body in 1995, withdrawing its Diploma and concentrating on the validation and accreditation of radiography courses. The Schools of Radiography had, in the majority of cases, become parts of universities or other higher educational establishments. They now existed as Departments of Radiography within larger faculties, such as Health Sciences. In practice what this meant for most radiographers was that educators were no longer restricted to delivering a curriculum which had been developed and examined by an external body. Departments of Radiography Education had to develop their own courses and, in the early days of degrees in radiography, there was little specific documentation which offered guidance as to how they should do so. Higher education centres were required to have a considerable input to the process and provided support and advice on course development. Radiography Education Centres rapidly developed experience in educational practices that enabled them to make informed choices when considering curriculum design, content, delivery and assessment. In retrospect it is clear that degree courses have required more critical approaches to learning than the academic, didactic dialogue of the diploma era, stimulating intellectual enquiry, a trait generally regarded prerequisite to coping with rapid change in technology and imaging procedures. The inclusion of a dissertation prompted a greater volume of radiography related research at both undergraduate and post graduate levels, rendering evidence based practice a more credible policy goal. At the same time it is widely accepted that radiographer-led research activity continues to be insufficient and is not afforded high priority.

Critics of degree programmes have tended to believe their clinical components to be less extensive than those undertaken by diplomates and their graduates to be 'less practical' as a result. At the same time, assessment of clinical competence in degree programmes was acknowledged to be more objective than

for the diploma. Most programmes assessed students performing, evaluating and discussing specific examinations or managing an examination room at various stages throughout their course. In addition, programmes might employ objective, structured, clinical examinations (OSCE) and practical and continuous assessments to provide evidence of clinical ability which count toward final degree classifications. Clinical and academic education experiences have been organised in blocks, the length of which have tended to differ between education centres, most operating a 50/50 split between academic and clinical learning with some variation, a few centres devoting up to 65 per cent of time to academic learning.

The College of Radiographers' programme of post diploma qualifications has also undergone radical re-organisation, having been replaced by a comprehensive post graduate programme of radiography and health science degrees. As Smith (1997) stated post registration courses previously offered by the College of Radiographers were based on inappropriate models for post graduate education, being designed *ad hoc* to meet advances in technology without being linked to a coherent, professional plan. The courses were lengthy, generalised and had little status outside the profession. They suffered the same problems which afflicted pre-registration education, such as decentralisation of examinations, with rigid curriculum, slow to respond to changes in practice. It was found that the move of undergraduate programmes into higher education led on to development of post graduate programmes. In response to changes in practice 26 higher education establishments offered a range of programmes at post graduate certificate, diploma or masters' levels. Eight centres offered qualifications in computerised tomography; six in mammographic studies; twenty in medical ultrasound; six in nuclear medicine; seven in magnetic resonance imaging; nine some form of reporting course; and two offered radiography training in barium enema studies. Three centres each offered a course in Paediatric Imaging, Radiation Biology/Protection or Health Sciences. In addition 11 centres ran the College of Radiographers' Certificate of Competence in Administering Intravenous Injections. Of these courses only four were available in Wales, namely a Post Graduate Certificate/Diploma in Computerised Tomography in North Wales, Post Graduate Diploma/MSc in Radiography and Post Graduate Diploma in Ultrasound in South Wales and an injecting course in North Wales. The

geographic spread of the workforce in Wales might indicate distance learning packages to be of use but none have been available. In addition in-house courses operated by employing trusts but not validated by the College of Radiographers in areas, such as injecting and manual handling were also available. It is a matter of conjecture whether such lack of available post graduate education has come about as a result of poor resourcing or lack of interest either by education providers or clinical radiographers or both. It may, at least in part, symptomatise a somewhat immobile workforce.

Radiography Education: recent influences

In the *NHS Plan* (Department of Health, 2000a), *Meeting the Challenge: A strategy for the Allied Health Professions* (Department of Health, 2000b) and *A Health Service for all the Talents-Developing the NHS Workforce.* (Department of Health, 2000d) government stated its commitment to modernising education and training and substantially increasing the number of health professionals. Technological advances, recruitment problems and extension of radiographers' roles have all been regarded as official sources of justification for the introduction of what we describe in detail in later chapters as four levels or tiers of professional practice in radiography (College of Radiographers, 2003b), assistant practitioner, practitioner, advanced practitioner and consultant practitioner. The radiography curriculum will need to reflect these in preparing the future workforce. The College of Radiographers (2002a) *Strategy for Education and Professional Development (EPD) of Radiographers* sets out a vision for future education and professional development for radiography that supports continuous improvement in patient services. Underpinning this educational strategy is a philosophy grounded in the beliefs that education is central to the delivery of high quality care to patients and clients and that education of every member of the profession is of equal value (College of Radiographers, 2003a:13). The benefits of inter-professional education and working are recognised in arrangements that seek to provide flexibility and progression in the education and professional development of individuals, matching them, in a spirit of lifelong learning, to service needs:

'All radiography environments should be considered as learning environments and should support learners to enable them to: achieve their full potential; feel valued and value others; practise independently within a moral and ethical framework; become a confident and supportive team member; understand how to operate effectively within the various radiography and health care settings; uphold and take forward the beliefs and values of the profession'.

Such approaches denote that knowledge, skills and attributes which prepare graduates for practice should also instil commitment to lifelong learning, collaborative practice, supporting innovation and change. It is intended that learning process aim at integration of theory and practice, enabling learners to develop skills and attitudes to cope with change and uncertainty. There is an insistence that radiographers should be mindful to practice within the moral, ethical and legal framework set out by the *Statements for Professional Conduct* (College of Radiographers, 2002b), the *Standards of Proficiency-Diagnostic and Therapeutic Radiography (*Health Professions Council, 2003) *and* the *Ionising Radiation (Medical Exposure) Regulations* (Department of Health, 2000c).

The Curriculum Framework for Radiographers (College of Radiographers, 2003a: 5) addressed the spectrum of practice for radiography and outlined the broad learning outcomes associated with competent clinical practice at assistant practitioner, practitioner, advanced practitioner and consultant practitioner levels. The skills and attributes, knowledge and understanding deemed to be relevant to the four levels of practice were identified as related to patient/client care, communication and interpersonal relations problem solving, reflection, psychomotor analytical and clinical judgment information management and technology and development; planning and organisational matters, autonomy, protocol and policy development, human resource management and teaching, patient/client assessment and team working and inter-professional practice. These areas of specific knowledge and understanding to be achieved at the four levels of practice draw from the biological, physical, clinical and behavioural and communication sciences, entailing juxtaposition of technology, applications and techniques,

alongside knowledge and understanding of legislative, policy, ethical and research issues.

While radiography education programmes were required to reflect this curriculum framework, as well as other guidelines, such as benchmark statements (Quality Assurance Agency for Higher Education, 2001), the design, delivery and assessment of programmes has varied considerably between higher educational institutions. Most programmes have combined material on anatomy, physiology, physics, equipment, behavioural sciences and radiographic techniques in courses divided into academic and clinical components, with the number of weeks attributed to each varying between departments, as was suggested in the preceding section. There have also been differences that may amount to inconsistencies when we compare the clinical competencies required by each undergraduate programme. Each department of radiography education devises its own programme of clinical education and its assessment. The competencies required of undergraduate students subsequently varied between education centres although the minimum standard required has been determined by the Health Professions Council (2003) *Standards of Proficiency*. The JVC and, subsequently, HPC have continued to seek to ensure that standards of radiography undergraduate programmes were maintained through input on validation committees, electing to attempt to ensure that clinical placements provide correct learning environments for students and monitoring outcomes of radiography education establishments. This is a model common across Health Service professions and has direct parallel in teaching, engineering, accounting and a variety of other occupations. The system continues to rely on the HPC initially validating and subsequently agreeing to any changes in the undergraduate curriculum, the universities' quality assurance programme plus the external examiner system. It is possible for students to graduate and yet be incompetent to practice if one of the links in this chain is ineffective. Much relies on the professionalism of those involved to ensure radiography students have passed all assessments and reached the required standard in clinical examinations. It is normal practice for undergraduates to maintain a clinical portfolio recording examinations performed which are 'signed off' by supervising radiographers when students have competently performed an examination consistently, since it is an

impossible task for all examinations on different patient types to be formally assessed. Additionally irregularities may occur since there are no guidelines for the training of supervising radiographers which is organised by individual radiography education centres.

Against this briefly delineated background of the growth and regulation of radiography and radiography education we now turn to the broadly defined research literature on these and some other, relevant fields.

Chapter Three

The Literature

The rather limited academic literature on radiography and the education of radiographers can be categorised as focussing on matters concerning competence and factors influencing radiographers' roles, 'role development' and professionalism and skill mix issues. Competence, roles and role development are dealt with directly in the next three sections. Questions of professionalism and skill-mix run throughout them and are pivotal to the closing discussion of the four tier system.

Competent and Competencies

The core function of the NHS is the provision of clinically effective service, ensuring that patients benefit to the greatest extent possible from care given by health care staff (Welsh Health Common Services Authority, 1996). This interest in understanding and clarifying effective practice, combined with pressure from health care managers and users requiring explicit statements of behaviour, has encouraged many professionals to adopt a competency approach, according to Hollis and Clark (1993), discussing what they termed the 'competency conundrum', confirming the confusion which surrounds the description of clinical ability. The authors held senior positions within occupational therapy (District Head Occupational Therapist and Assistant Principal of a School of Occupational Therapy) and sought to provide an authoritative academic and clinical report. They attempted to clarify the terminology associated with competency since they felt that there had been misunderstandings and misuse of the terms competent, competence, competency and competencies. They considered a variety of definitions ranging from: Longman et al's (1991) use of competent as 'legally qualified, having the capacity to function or develop in a particular way', to regarding competency as an interpretatively defined area of skilled performance identified and described by its intent, function and meanings (as in a competency statement), competence as including a broad range of knowledge, attitudes and observable

patterns of behaviour which together account for the ability to deliver a specified profession service (McGaghie and Miller, 1978); and seeing competencies as clusters of behaviours that are specific, observable and verifiable and that can be reliably and logically classified together (Jacobs, 1989).

With so many definitions of terms surrounding the same theme it is not surprising there had been confusion about what constitutes a competent radiographer. Gonczi et al. (1990) undertook a study on behalf of the Australian National Office of Overseas Recognition in an attempt to establish competency based standards among them, defining competencies as the factors on which successful performances depend, implying that individuals not demonstrating them can be considered to be performing at lower standards than are required. Behavioural objectives, in turn:

> 'identify the kind of behaviour that students must demonstrate after learning has taken place, the important conditions under which the performance is to take place, and what is considered acceptable performance' (Lowenthal, 1977:6),

while a performance is the expression or demonstration of competence in some particular circumstances (Ashworth and Saxton, 1990).

While Hollis and Clark did not comment specifically on such individual definitions, they concluded that people were competent or incompetent to do a task and that the 'competent' was a state capable of definition and assessment. People held or lacked a particular competency (which may be capable of definition at different levels of expertise) and they had, or did not have, competencies to do a job. These competencies may include a wide range of particular competency areas and one may specify levels of expertise within each competency. People demonstrated their competence by their occupational behaviour/performance. Hollis and Clark believed competence both to be definable as a minimum standard to be achieved and also as including a standard of performance. Several of the definitions that they considered, if not plainly contradictory, were somewhat at odds with one

another. Longman's interpretation of competent and Jacob's definition of competencies indicated the need for specific statements in relation to both, while McGahie and Miller's definition of competence entailed a broader, more general approach. In practice, these different terms and ideas were and are used somewhat interchangeably in much of the literature. Greater consensus of opinion would appear to be required, even of terms such as 'legally qualified', as used in Longman's interpretation of 'competent'. We may assume that Longman was referring to qualifications which are prerequisite to employment but might also be referring to registration with a specific body, such as in registration with a statutory body, essential for one to practise. While there appears to be a link between behavioural objectives and competencies, it is Lowenthal's terminology that best identified the need for clear definitions of behaviours and skills that are acceptable.

Competence and Practice

Hillier (1997) discussed the introduction of competence based qualifications from a users' perspective, drawing on the experiences of the City Lit. Training Unit that provided vocational qualifications for tutors and trainers in post compulsory education. Hillier noted that the 'meaning' of competent had become a definition of what a practitioner should do. If practitioners did not undertake expected tasks they were not deemed competent, service users defining professionals as competent if they were satisfied with the service received. Competent becomes 'good enough' or 'able' rather than 'good quality', according with the Oxford English Dictionary's definition of 'sufficient in amount, quality or degree.' Standard or level of performance has, however, always remained an issue. Benner (1984) suggested a five stage framework extending from 'novice' to 'expert' with 'competent' at mid point, requiring detailed descriptions of what was to be expected at each stage. Difference in interpretation has, then, been highly evident between those who have considered 'competent' to be 'adequate', a description of behaviours which can be improved but are sufficient for the work being undertaken, while others have regarded it as a description of professional expertise.

Williams (1995), a Principal of a School of Radiography, acknowledged that professional competence was a controversial issue which defied accepted definition. At the same time she and her educational establishment must have held a definition of what was competent as they were engaged in attempting to produce 'the workforce of the future'. The *Occupational Standards for Diagnostic Ultrasound* published by the College of Radiographers (2001a) acted as benchmarks for good practice in diagnostic ultrasound but it was not until 2003 that the Health Professions Council published their *Standards of Proficiency* for diagnostic radiographers. This document sets out the standards of proficiency for safe and effective practice that registrants with the Council are expected to meet but are general and descriptive.

The College of Radiographers *Curriculum Framework for Radiography* (2003a: 5) addressed the 'spectrum of practice for radiography and outlines the broad learning outcomes' associated with competent clinical practice at assistant practitioner, practitioner, advanced practitioner and consultant practitioner levels. Because it attempted to address all four levels, outcomes are non-specific and open to interpretation and, even more importantly, since specific imaging examinations are not identified, it is difficult to determine the requirements for radiographers' clinical competence. Similarly *The Benchmark Statements* produced by the Quality Assurance Agency for Higher Education (2001) charged higher education institutions, in partnership with health care providers and agencies, with responsibility of creating curricula that enable both the development of competence to practise and incorporation of new and emerging development within the discipline. Again, the ambiguity of the documentation and lack of identifiable clinical examinations do not assist in the determination of competence to practice.

The College of Radiographers described the use of its ultrasound occupational standards as recruitment specifications, the basis of job descriptions and as used in the development of an education and training course. Occupational standards for general clinical imaging were included in the Department of Health's *Skill Mix* Report (2003a) which identified 30 standards, though they were vague and related only to minima and did not take account of work undertaken in managerial, specialised positions or at different stages post-qualification as radiographers

gained experience and expertise. Schon (1987) reminded us that competency is not a once and for all achievement, a viewpoint reflected by those radiographers participating in this study who felt generally well prepared for their roles upon qualification while not feeling that their radiography education had prepared them well for later stages in their careers, given the ubiquity of technological advance and their movement into more managerial roles and specialised modalities.

Competence and Qualifications

Eraut and Cole's (1993) technical report on behalf of the Employment Department's Strategy Unit was a policy analysis of current practice in the formal assessment of professional competence for the purpose of qualification, registration or membership of professional bodies. The evidence cited was derived from case studies of 11 professional groups, (including optometry, nursing and social work) although the discussion of issues was based on wider consultation. The report confirmed the difficulties involved in describing competence, argued to be caused by the implicit nature of professional knowledge. A common characteristic displayed by all the professions surveyed was recognition that competence included a holistic approach to professional matters, in addition to being able to carry out key professional tasks to an acceptable standard. Eraut and Cole considered statements, commonly referred to as standards, whose purpose was to indicate what qualified people in a profession are competent to do and by what criteria their competence should be judged. There were considerable variations between the professions in the way that standards of professional performance were described. Industrial Managers' standards referred to elements of competence to be demonstrated in the workplace and performance criteria which defined how each competence would be judged, with range statements setting out the circumstances within which each must apply. Standards in other professions used in the study were expressed less explicitly resulting in a variety of interpretation, basically of a tacit nature, yet understood by 'seasoned' professionals. Radiography, while not included in the study, was clearly not the only profession lacking clear guidelines as to the nature of competency.

A further dilemma arises when considering competency to practise. Williams (1995: 121), discussed 'fitness for purpose' as a quality measure, suggesting that 'quality' had meaning only in relation to the purpose of the product or service. It was, in this sense, a functional definition, in contrast to the idea that quality was elitist, special and hard to attain. The Higher Education Quality Council et al. (1994) reported that as a result of the introduction of fitness for purpose by Regional Health Authorities many (though the number was not specified) education providers had employer-led competency statements written into their contracts. If newly qualified practitioners did not fully meet the criterion of 'fitness for purpose', purchasers had evidence with which to instigate changes in curriculum or course delivery. Bergman (1981) commented that 'fitness to practice' was significant because it was better able to describe the actual and potential capabilities of a practitioner although it is arguable how potential capabilities can be determined.

Ingalsbe and Spears (1997) identified effective and ineffective behaviours for use in evaluating the performance of student dieticians. They suggested that a programme could be used for evaluating practitioners, recognising that the cognitive domain cannot reliably indicate competency in professional practice that was best judged by observation of their behaviour when confronted with situations requiring exercise of essential skills and judgements. Black (1984) defined competency to practise as the ability to perform adequately (to the customary standard of precision and safety and in the customary time), the tasks of a newly qualified radiographer, as defined in a job description. Both Black and Ingalsbe and Spears leave us similar problems in interpretation of 'adequately', 'customary' and 'essential skills and judgement', respectively, that need to be defined in objective terms using statements of expected behaviour. 'Adequately' suggested tasks should be performed to a minimum level, while 'customary' could be interpreted as referring to an accepted standard. Lack of clear statements indicated confusion surrounding the competencies required of radiographers. A difficulty surrounding the use of job descriptions to determine competency was that their standardisation was impossible, given the varied tasks and responsibilities of radiographers' working in different imaging departments. In addition to this inherent problem in adapting a job description as a baseline for competency, the expectations of employers in different

parts of the country were not uniform because of variations in techniques and practices within imaging departments and the personal ideals of those responsible for job descriptions. As a result, students considered competent in one geographical area might be considered incompetent in another. A further problem arose, particularly when considering competence in specialised techniques as, in some departments, specific skills might not be required for several years, requiring undertaking of further training to ensure competency when necessary. Whatever the rather doubtful merit of Black's defence of her use of job descriptions, arguing that students would only be allowed to qualify when they satisfied criteria specified in those which she detailed, they would be quite unsuited to the present climate, given the developments in technology and working practices that have occurred since her paper was published.

Williams and Berry (1997) reported on developing 'first post' competencies of newly qualified diagnostic radiographers by consulting with the profession, employers, educators and practising radiographers to establish fitness for practice, clarify fitness for purpose and preserve fitness for award. They hoped that by seeking expert opinion from each of these groups they would arrive at interpretations of competence which would be generally accepted. Such standards would also allow decisions of incompetence to be made and provide a foundation for the development of valid assessment methods for the evaluation of continuing competence. The development of such standards would concur with Eraut's (1994) recommendation that professions should have public statements about what its qualified members are competent to do and what could be reasonably expected of them. Williams' and Berry's data was derived from a panel of 'experts' chosen following a pilot study when twenty two radiographers from the North East of England were asked to name up to five people who they considered best placed to consider the current and future roles of radiographers. It cannot be considered to have generated a representative sample since the majority of its members were from the same area as pilot study participants who, understandably, named those with whom they were familiar. A Delphi technique was then used where consensus was regarded as having been reached when 80% of the panel either agreed or disagreed with items.

One of the questions put to the panel was 'at what stage after qualification should a diagnostic radiographer be expected to competently carry out the roles and responsibilities accorded to someone in their first post?' Only 24% felt competency was achieved upon qualification, the majority (61%) believing that it took 1-3 months for neophytes to accommodate to their new role, possibly raising a question regarding the effectiveness of educational establishments in the North of England. The study concluded that qualification did not mean competence and suggested a probationary or pre-registration period during which new qualifiers were monitored. A highly regarded element for assessing competence was the ability of newly qualified radiographers to participate in 'on call' duty. This 'measure' was vague as to the skills, techniques and behaviours required, making standard assessment virtually impossible. It can be assumed that respondents considered radiographers to be competent when they could work independently and single handed, as is usually the case when providing an on-call service. The imprecise nature of such statements provides some overview of radiographers' work but does not contribute significantly to an accurate picture of what they can or should do, even within the 'newly qualified' period to which they were confined. Several statements that were widely felt to be vital to a description of a radiographer's work did not reach consensus, including 'to practise competently', 'practise and work autonomously' and to 'understand that it is not their job to diagnose'. Given the further difficulty that there was a shift of opinion attributed to loss of panel members, the findings of this study cannot be considered to be either valid or representative, even if one accepts the soundness of a Delphi technique, about which there is considerable scepticism.

Competence in the Workplace

Performance criteria can be taken as expressions of what a competent professional would do in terms of observable results and/or behaviour in the workplace (Heywood et al.,1992). Mansfield and Mathews (1985: 17) discussed how competence is defined by:

i) the individual capacity to undertake activities requiring independent planning, implementation and self monitoring;

ii) the ability to use knowledge, product and process skills and, as a result, act effectively to achieve a purpose;
iii) the possession and development of sufficient skills, knowledge, appropriate attitudes and experience for successful performance in life roles; and
iv) the application of skills and knowledge and attitudes or tasks or combinations of tasks to standards under operational conditions'.

They were not alone in implying that competence is the product of some education, training or other experience involving the application of knowledge and skills and exhibited through purposeful and real activity that can be tested and recognised. However, their definitions lacked sufficient detail to enable them to be used as a measure. When considering the notion of job competence these broad definitions need to be made more specific. According to Mansfield and Mathews, job competence was what most workers and employers rated highly day to day Some individuals might associate it with being able to perform a set of quite specific tasks while others would relate it to contributing to overall effectiveness in the workplace. Although tasks could be individually described and assessed they were commonly performed together within particular working environments in such a way as to demand skills in addition to those of the individual ones themselves. The order in which tasks were to be performed, taking account of priorities, availability of equipment and efficiency in the sequence of working, all needed to be planned in advance. Unforeseen happenings required adaptation of individual performance or practitioners to undertake several tasks at the same time, or perform some not normally required of them. All of these contingencies suggested competency rather than task performance. A job was, therefore, more than a collection of tasks. There were skills related to everyday activities and unpredicted events, of responding to special needs and priorities, as well as those concerned with ensuring that the workplace was kept safe and of dealing otherwise with the physical environment. In sum, Mansfield and Matthews suggested that tasks, task management and role/job environments were three interrelated components of job competence. Task components required skills that were used in a routine way, had definite outcome and a product that was a direct result of a particular activity. Task management involved skills which were used, for instance, when there were a number of them to

be accomplished or where they required additional activities. Where a job included responsibilities which might intrude on routine tasks, or when problems or difficulties occurred, task management was critical to competent performance of jobs. The job environment component suggested by Mansfield and Matthews included skills of working directly with others inside and outside the workplace, particularly members of the public. They were also used in responding appropriately to situations with known health and safety hazards. They asked (1985: 26):

> 'How many technicians, managers [...] or doctors can be said to be fully competent if their skills are only those of carrying out tasks? There are people who perform their roles without the necessary skills in all the components of job competence but these create problems and inefficiency for themselves and other people'.

They concluded that skills in dealing with task management and role/job environments were strongly related to the concept of personal effectiveness, to which core skills in communication and problem solving were particularly important. They argued that if individuals were to be adaptable and mobile it was important that all three components of job competence were recognised by educators and trainers, employers and employees. In the 1970's the USA company McBer had already devised a competency approach as a management tool. Their purpose was to identify those personal characteristics that resulted in effective and/or superior performance in a job (Dulewiez, 1989). Affective behaviour, as well as demonstration of specific skills, was to be considered when competency was being determined.

Mason and Wagner (1994) highlighted the rapidly growing need for staff who could work with new and complex analytical methods based on theoretical understanding, rather than those who simply relied on past experience or trial and error Growth in demand for high level skills and knowledge reflected intense competitive pressures. Manufacturers were obliged by their customers to achieve higher quality standards and meet ever more elaborate performance specifications. A similar situation existed in the National Health Service, with Trusts competing for

their share of the market and consumers (patients) expecting to receive effective care. A simple base line of competence would not appear to be sufficient when dealing with such environments.

Bosworth and Wilson (1992) found that profitability and growth in engineering firms directly correlated with employment of highly educated professional engineers and scientists. The College of Radiographers (1996a) produced a statement of policy detailing the requirements deemed necessary to providing professional standards of care with respect to diagnosis, treatment, radiation protection and all other aspects of patient care. It stated that the aim of the diagnostic imaging service was to provide clients, referring clinicians or purchaser units with a high quality of service, ensuring safe and effective patient care which complied with relevant statutory instruments and current regulations controlling the use of ionising radiation. These enshrined the principle of the lowest possible dose consistent with diagnostic or treatment needs. This philosophy was one which could fairly be ascribed to the majority of imaging departments, though only audit would determine whether it was being achieved, with 'high quality', 'safe' and 'effective care' requiring particular analysis as they applied in the clinical setting. The staff development and education referred to in the statement did not specifically address competency, being too generic to enable any conclusion in that respect to be drawn.

Professional Competence

We noted that Eraut (1994) claimed that all professions should produce public statements about what their qualified members are competent to do and what people can reasonably expect of them. In our field, such statements of competence would build upon the *Statements of Professional Conduct* published by the College of Radiographers (2002b). But we have also noted that Hillier observed that competent has come to mean 'good enough' and that service users tend to define professionals as competent if they are satisfied with the service received. Meanwhile many professionals are suspicious of competence based qualifications that are seen as defining what is 'good enough' rather than what is good quality.

Standards which describe the competence of qualified personnel that are synonymous with a set of standards that should be demonstrated (Hillier, 1997) allow decisions to be made as to when incompetence occurs (Williams and Berry, 1997). They can also provide a foundation for the development of valid assessment methods, including the evaluation of continuing competence, as well as assisting statutory boards in making judgements about the qualifications of individuals trained overseas seeking employment in the UK .(Williams and Berry, 1997). The Health Professions Council (HPC) set out *Standards of Proficiency* in 2003 which applied to the profession of radiography and those seeking entry to the United Kingdom register as a diagnostic radiographer. They described the proficiency required for competent and safe practice and the minimum requirements for admittance to the register. In addition to applying to new graduates and those from overseas, the standards apply to those seeking re-admittance to the register following a lapse in registration of five years or more. They are structured using fourteen areas of capability. Each is described in the broad diagnostic context, from which a number of outcome statements (143 in total) are identified and related to radiographic practice. While these standards require radiographers to demonstrate safe and competent practice and the learning outcomes specified constitute significant progress in relation to earlier attempts to define competence, they remain subjective and somewhat unclear.

The curriculum framework in radiography (College of Radiographers, 2003a) recognised that greater use of occupational standards, benchmark statements, standards of proficiency, standards of education, training and CPD impacts on the development and demonstration of competence in the radiography workforce. However, distinction needs to be made between competency to practice upon qualification and competency at various stages throughout radiographers' careers. Koch (1991) and Drummond (1986) were among those who have documented varying standards within radiography practice. Cunningham (1993) suggested refresher courses, appraisals and competence assessments to deal with problems of maintaining competence. Henwood (1996) found that competence levels of radiographers fell after only one year, highlighting the need, even at this foundation level, to manage quality.

While we have already seen that the 'Job Competence Model' developed by Mansfield and Matthews (1985) pointed to a flexible approach, incorporating technical aspects, task management, contingency management and role/job environment skills where roles were adapted to match changing demands, Hevey (1994) was concerned with development of the potential of the whole person rather than with an approach which had only a narrow, vocational purpose. Similarly, Fleming (1992) has introduced the idea of meta-competence, extending the scope of specific competences to those which have an overarching function. Schon (1987) introduced the idea of reflective practitioners who developed and extended skills through reflective self awareness, indicating what Eraut (1994) called the ability to manipulate one's own competencies. Such 'metacognition' or 'control knowledge' covered a range of areas associated with one's own behaviour, such as knowledge of one's strengths and weaknesses and self management, so that competence is viewed not as a once and for all achievement but as qualities capable of continuous development.

Terrel-Nance and Thomas (1995) noted that among the external factors forcing radiographers to expand their skills beyond basic clinical practice were health care reform, rapidly expanding technology and growing emphasis on cost-containment. The Pew Health Professions Commission (1992) recommended that all health care practitioners 'possess an expanded set of competencies' by the year 2005. Professionals have come under greater pressure from governments, consumers and employers to improve standards and quality of service, to maintain competence and to be more flexible in the way they work and the services that they offer. (Watkins et al., 1996)

Is professional competence and competence to practice, then, the same? If not, does one depend on the other? Williams and Berry (1997) commented that the notion of competence has evolved to become a much broader, given the belief that it is impossible to reduce professional roles to a series of tasks and functions without taking into account individual personal characteristics and relevant behaviours resting on creativity, sensitivity and intuition. Kimber (1998) contended that the idea

of professionalism within radiography entailed truthfulness, accountability for actions and appropriateness in attitudes to patients and other members of staff. This emphasis on affective behaviour was noted by Williams and Berry (1997) who argued that the concept of occupational competence defied a clear definition because of the difficulty in separating personal qualities from employment roles. It was essential to consider affective behaviour as well as practical/clinical skills.

The College of Radiographers (2003a) noted that possession of attributes, knowledge and skills that enabled individuals for practice also entailed commitment to lifelong learning. White and McKay (1999) considered how qualified radiographers could demonstrate their competence to continue practising, a presaged requirement of the Health Professions Council. It has been suggested that continuous professional development might be used as a tool to indicate competence, points being credited for courses and conferences attended. While White and McKay's review failed to provide answers it served to encourage debate among radiography professionals. While encouraging further growth mechanisms for measuring competence must be effective if they are to be used as benchmarks for license to practice. If attendance at conferences and courses is to be used to demonstrate continuous professional development and, thereby, indicate competence, its relevance and the value of the accreditation of points for doing so must be determined.

We might well ask, then, where this seemingly incessant, even at times obsessive, debate about 'competence' leaves us. The first thing that might be said is that it ought not to be thought of in terms of 'natural' or decontextualised individual abilities. Notions of the 'born' teacher, nurse, radiographer, or whatever are the refuge of those unable or unwilling to conceptualise adequately the complex interactions of persons and their attributes and the contexts in which they operate. Secondly, moreover, judgements of what count as competent behaviour are relative to changing cultural and technical conditions. The limits of the possible interact with what come to be regarded as expectations of the everyday. Thirdly, if competence(s) is/are always in relation to something, the character of the 'something' matters. Life or death 'somethings', as in medicine, nursing and other

para-medical occupations, including radiography, or in teaching where the vulnerability of learner identities are exposed to practitioner activity, evoke extended 'bottom line' requirements in terms of knowledge, understanding and performance. Finally, such occupations figure historically among professions and semi-professions part of whose very meaning is the character of their (self) regulation and licensing by the state. Those who do 'dangerous' work may be expected to meet more or less stringent criteria as to the conduct, character and manner of the services which they provide. Technical, affective, social and ethical attributes codetermine performance. At the same time, in more open and informed societies, such as ours, transparency in the control of competence/incompetence is much more highly demanded than formerly. This takes complex forms in areas of state production, such as most health and education provision in the UK. The state itself has been continuously changing in its relation to the provision of health and educational services and the autonomy granted to practitioners. New forms of managerialism set (semi) professions, like radiography, in target dominated cultures of 'performativity', to use the term tellingly employed by Ball (2004) to analyse the position of our teachers. It follows, then, that it is to an understanding of the many sources of change that have impinged upon or shaped radiographers' worlds that we should now turn. We find that the existing literature has much more to say about some of these issues than others and that its central concerns have been rather technicist and social-science naïve.

Factors influencing radiographers' roles

In this extended section, I deliberately start with a heading that typifies the language and genre of much of radiographic occupational research. At its most dogged, it depicts 'the radiographer' as having 'a role' which, as often as not, is 'changing'. The reification implied has long been shared across analyses of professions, for example, in relation to doctors, nurses and teachers, driven by normative search for statements about what is 'essential' and 'good'. Its danger is that it instates ideas of individual attributes and qualities where understanding of contexts should be, regarding as 'normal' what is complex and differential. Social analysis has very largely abandoned it as a legitimate mode. For example, theories

of leadership or management no longer refer to the 'traits' or individual attributes of actors but to how situated behaviours and understandings in complexly conceived contexts engender or inhibit forms of activity. For this reason I have not gone all the way with this heading, talking of 'radiographers' roles' rather than the mythical, singular (Grint, 2005) 'radiographer'. But the notion of 'factors influencing' does symptomatise the rather inward looking ragbag of considerations that have been pursued in describing and attempting to understand radiographers' work and relations.

Naming the parts

A very brief history of the development of 'radiographers' roles' was broached in Chapter Two. Diagnostic radiographers were described by the College of Radiographers (1987) as having a key role in the diagnosis of disease through production of high quality images, generated by X-ray equipment or radionuclides, from which diagnoses could be made. The College also acknowledged the expertise of diagnostic radiographers in specialist areas, such as ultrasonography, radionuclide imaging and magnetic resonance imaging. Ten years later, the 'key roles' of diagnostic radiographers were equally descriptively identified by Williams and Berry (1997: 21) as to '(A)ssess, plan implement and evaluate the clinical examination in order to produce high quality diagnostic images in a wide range of circumstances'. Price et al. (1997: 22) offered a rather more complex definition, hinting at some reflective autonomy and managerial activity:

> 'Radiographers analyse requests and patient histories, assess the existence of contra-indications, position the patient, equipment and recording device to optimise diagnostic images. In addition they supervise and assess the technique of junior staff and students.'

In truth, while senior radiographers supervised it is questionable whether junior staff did so, either in relation to their peers or, if inexperienced, students. By 2003, some 16 years after its initial pronouncement, the College had amended its description to reflect changes in practice. Diagnostic radiographers were now regarded as

practising within the broad field of imaging, utilising ionising and non-ionising radiations to safely and effectively achieve a diagnostic image:

> 'Using a range of complex imaging equipment within a variety of clinical environments, radiographers perform diagnostic examinations across the life span and the extremes of health from screening the well, to patients with terminal disease (College of Radiographers 2003a: 13).

This overly narrow depiction failed to acknowledge what had become aspects of radiographers' roles unrelated to image production, such as research, supervision of students and relatively newly acquired, or what were referred to as 'role development activities', such as injecting, line insertion and counselling which will be explored later in this chapter.

The NETRHA investigation

The main project that had informed our understanding of radiographic work, with a sample size of 710 staff across ten trusts, was undertaken by the North East Thames Regional Health Authority (NETRHA, 1994), jointly commissioned by the Department of Health and the College of Radiographers, to identify the skills and competences required in imaging departments. While the NETRHA study concentrated on activities rather than roles it provided valid information on the daily tasks of those involved in the delivery of a diagnostic imaging service. Moreover, although it was undertaken over a decade ago, its findings presented a descriptive baseline against which subsequent change has tended to be measured.

The study included a task analysis, as well as a role satisfaction survey. Eleven staff groups were identified as working together in participating imaging departments, suggesting crossover of tasks and blurring of professional boundaries. While generally following traditional demarcation of duties, providing 24 hour cover, departmental geography and functional organisation were found to influence the skill mixes achieved in different imaging departments at different times. Not all staff groups were employed 'around the clock' and it was found that that during 'out of

hours' radiographers were frequently required to take on responsibilities and duties normally covered by support staff. This was generally thought to occur in most imaging departments, involving performance of additional tasks, such as administrative, clerical, portering and radiography helper duties. Many radiographers were expected to cope with this expanded range of work as little as three months after graduation, raising questions as to whether they were or are fully prepared for such responsibilities. The study found that among the groups of staff employed in imaging departments, the range of activities was highest for those in radiographer grades who were expected to perform basic and sometimes repetitive tasks not usually undertaken by more senior colleagues. More junior members of staff spent significant periods of time waiting for work, the most frequently recorded activity for the radiographer grade, followed by undertaking imaging procedures and evaluation of images.

Radiographers' 'role development' was clearly in its infancy at the time of the NETRHA study which demonstrated little evidence of radiographers reporting, administering injections or undertaking barium enemas, with no overlapping of tasks that constituted skill mix between radiologists, radiographers and nurses. Repeated now, such a study would show considerably greater 'development' of radiographer activities into previously radiologist-led areas. NETRHA showed that which grades of staff performed more complex procedures was influenced by staff mix rather than complexity of procedures. This was an issue raised by one of the managers whose views will be considered later in the present study, concerned that his staff were appointed at a lower grade than those demonstrating the same or similar skills in other departments. Our study also found that division of senior radiographers' time between management activities and imaging procedures was variable and dependent on their place of work and that promotion made possible by movement into specialist imaging modalities had driven many practitioners away from general radiography, even if they enjoyed or preferred it.

Scope of practice

Such considerations immediately highlight the ongoing preoccupation of descriptive studies of radiographers' work with scope of practice or 'role development', an important focus of two other major, albeit methodologically flawed, studies in the nineties (Paterson 1995; Price et al. 1997) Moreover, while several other studies have examined radiographers' new roles, few have explored changes which have taken place in the traditional aspects of a service medically directed by qualified radiologists, even where radiographers, in some respect, work more independently and autonomously. Paterson (ibid) started from the premise that radiographers did not operate independently and relied on others to determine the activities that they performed. In practice, radiographers in diagnostic radiography did not request imaging examinations; images were produced in response to the completion of a form by a qualified medical practitioner or, in some circumstance, by a nurse practitioner in a casualty unit, trained specifically for this role. The NETRHA study (1994) had typified traditional demarcation of roles in imaging departments as radiographers producing images and radiologists making their diagnoses from them. Paterson (1995) undertook a postal survey of education centres and radiography and radiotherapy managers and departments. Questionnaires distributed to education centres and managers elicited qualitative data, particularly about factors affecting role development and the roles of centres and the College of Radiographers in relation to it. Similarly, qualitative and quantitative data was gathered from 330 clinical imaging departments about the volume and range of role development activities taking place. A questionnaire concerning role development activities indicated that intravenous injecting was the most frequent, occurring in just over 80 departments where radiographers injected patients undergoing intravenous urography and computed tomography and, to a slightly lesser extent, radionuclide imaging. They were undertaking and reporting ultrasound examinations in over 200 hospitals. But responses were generalised and recorded in terms of hospitals rather than numbers of radiographers involved. 'Role development activities' were researched without defining the term for respondents and information elicited concerning skills to the exclusion of concomitant 'developments', for example in relation to autonomy, problem solving, decision making, research, reflection,

education, patient care or quality assurance. Paterson concluded that radiographers' role development was 'unstoppable' yet faced with two major obstacles in the form of resources and opposition from radiologists. She concluded that skills needed by radiographers in the future would be assessment, problem solving, decision making, evaluation, judgement, planning and managing, in addition to displaying accountability for their work. Yet these categories were not evidenced in her study. She suggested that some of these skills were under-utilised and under-recognised by collegial professions, though she did not specify those to which she was referring. If radiography was to develop, Paterson (1994a) had contended, it ('the profession') needed to demonstrate maturity beyond that which it currently displayed. She felt that that the *Professional Code of Conduct* and the State Registration Board's *Statement of Conduct* were inadequate to govern radiography as it ought to be practised in the future. The professional code made no reference to a duty of patient advocacy, radiographers seeing themselves solely as agents of medical practitioners for whom they carried out imaging examinations and/or treatments. The statement of conduct, while permitting radiographers, under highly circumscribed arrangements, to discuss with patients the imaging appearances of their examinations, did not demand them to do so or require them to make radiographic reports routinely.

Price et al (1997) sought to gain information on 'the professional role of the radiographer', including the way in which roles and skills were changing and the implication of such change for education. A survey of professional staff utilised interviews and questionnaires. A stratified approach was chosen in sampling radiographers, radiography managers, radiologists, oncologists and medical physicists and, for radiographers only, length of time qualified. 107 interviews took place, with questionnaires also being administered to radiographers. However, not all responses by individual groups were presented as evidence and it is unclear whether results were confined to the responses of radiographers only or drawn from the total sample. Specific questions, for example, on the effect of technology on professional roles, were asked of all groups except practising radiographers with other questions, such as whether qualified radiographers should give intravenous injections put to the radiography group only. The rationale for such selective

sampling was not explained. When the 'diagnostic' interview sample is referred to it is unclear whether this included radiographers, managers and radiologists in a diagnostic imaging department or whether it pertained to radiographers only. Raw data was not available for examination and many general conclusions were drawn without supporting data. While the authors claimed that radiographers were asked what roles and tasks they undertook, under what circumstances and at what level, there were no corresponding results. Methods used were not clearly articulated and the questionnaire used is not included in the report. They claimed that agreement was shown among their sample of diagnosticians as to the majority of the technical tasks listed in the questionnaire considered to be essential to the role of the radiographer. However, absence of detailed information regarding tasks, numbers and classification of responses raised questions regarding the validity of such a finding. Comparisons as to variations and similarities between the roles of different groups with reference to age, experience and setting would have provided valid and useful data but are not made and cannot be inferred. Results and conclusions are not clearly presented and such as are offered must be treated with some scepticism.

Various other methods have been employed in attempts to discover the detail of radiographers' daily activities and responsibilities. Examination of job descriptions might be expected to provide indication of the expectations of employers and, therefore, insight upon roles. Flinton and Simpson (1996), in attempting to determine what was required of newly qualified radiographers, examined job descriptions but could find no universally agreed, documented evidence. Criteria were laid down in job descriptions for recruitment and selection purposes but applied to specific departments, tailored to meet the needs of each and were, thereby, variable in content and detail. The geography of imaging departments influenced the roles of their radiographers. Most large imaging departments incorporated a number of rooms that were customised, with facilities for specific examinations. This was aimed at maximising the efficiency of departments in terms of throughput and usually facilitated the execution of examinations. Smaller departments might offer experience of a limited range of general examinations or could be specialised, focussing on a small range of them or certain types of patients with specific needs. In addition to these differences

radiographer roles were influenced by workload management and allocation of responsibilities in specific departments. Imaging departments might have separate teams working exclusively in specialist areas within themselves. Alternatively, all staff could be allocated to work in these and other areas on a rota system, thereby increasing their work experience. With such variation in the roles and responsibilities of radiographers, it is not surprising that it has proved difficult to identify and generalise about them.

Akroyd and Wold (1996) examined the importance that radiology managers placed on radiographers' skills and their ability to perform them. Both were radiographers, working at the time of the study as an educationalist and a technical director of a department of radiology, respectively. The combination provided an interesting mixture of thought and insight, finding mismatch between workers and workplaces, a difference between the importance placed by radiology managers on radiographers' skills and the ability of radiographers to perform those skills. While this study was performed in the United States of America there was no reason to suggest that the situation was substantially different from that existing in the United Kingdom.

In reviewing the literature, then, certain key elements of clinical radiographers' roles persistently appear related to health and safety, clinical practice, interpersonal skills, professional knowledge, patient care, technical skills, teaching and learning and team work. These can all be considered as components of their repertoires. Meanwhile, benchmark statements for radiographers (Quality Assurance Agency, 2001) have remained descriptive, failing to provide sufficient specific detail, certainly for our purposes, best regarded as minimum requirement for the award of honours degrees in radiography and of little relevance to practising radiographers. The *Standard of Proficiency* (Health Professions Council, 2003) also 'set out the safe and effective practice registrants are expected to meet', are generalised and of little assistance when attempting to determine specific elements of radiographers' roles.

The other recurring motif in the literature has been that division of duties is now less clear in some imaging modalities, where radiologists and radiographers select images during dynamic studies, such as screening procedures and interventional techniques. Radiographers' roles have expanded, and continue to do so, into these previously radiologist-dominated areas. Practices have changed since 1994 and radiographers now operate independently in some areas, performing and reporting on images, though generally they still do not request imaging examinations. However they may and do question requests for imaging examinations if they do not feel them to be justified. Additionally radiographers can undertake examinations other than these requested if, in their opinion, they are inappropriate. In some circumstances radiographers take further projections of a particular body part when necessary, though newly qualified radiographers may not be confident in using their initiative and may rely on radiologists or senior radiographers for guidance and it is open to question whether radiography education has prepared them adequately to make such decisions. It is to be established empirically whether radiographers who are not exercising autonomy do so because they do not consider themselves adequately qualified or are prevented from doing so by working practices established and maintained by radiologists. In some respects nurses seem to have more confidently 'developed their roles', qualified nurse practitioners having for some time been able to request imaging examinations while such activity is relatively new among radiographers. The College of Radiographers (1996b) was commenting almost ten years ago that:

> 'Radiographers should develop their professional role. This may be done provided they have been properly trained for the role development, there is an agreed written scheme of work and the employing authority has been informed in writing and assured of the radiographers' competence'

In reviewing and revising the *Code of Professional Conduct* (1994a; revised 1996) it became apparent to the College of Radiographers (2001b) that key issues of changes in patterns of service delivery, continuing professional development (CPD) and requirements to demonstrate professional competence, as well as recognition of individuals' rights, were not demonstrated transparently. The 2002 version of the

Professional Code of Conduct did attempt to reflect current practice but still not did include guidance on the vital control issue of reporting by radiographers, saying only that 'Working within the multidisciplinary team and employers' guidelines/procedures radiographers may discuss with patients the outcome of a medical imaging or therapeutic procedure'. (College of Radiographers 2002b:10) Such lack of precise direction regarding reporting and other activities indicates 'the profession' is in a state of change and that, currently, further direction is inappropriate.

Role Development, Role Extension, Role Expansion or Skill Mix?

We are somewhat in the same terminological pass over the treatment in the literature of these issues as we saw was the case in analyses of competence/ competency. In the encoded terms of the discourse, 'development' here usually refers to radiographers undertaking procedures and functions not formerly thought appropriate, either because of lack of training or preparation or because they were somebody else's jobs. The 'somebody else' was and is usually radiologists, medical controllers of the service with power to determine the limits of radiographers' work. But the context has been a dynamic one, 'jobs' themselves changing under the influence of advancing medical, diagnostic and technological understanding and techniques. While the demarcation of radiologist and radiographer roles has echoed many elements of struggles for power, control and autonomy that have been evident in doctor-nurse relationships, it has also its own modalities. Aspects of these are reflected in the debate in the literature as to whether changes in radiographers work taking place are best captured by labelling them as more of the same, the same only more, more and different, just different or combinations or these in the presence of others.

Paterson (1994a), for example, differentiated between role development and role extension, regarding development as a process of becoming more mature, advanced or organised, while extension was merely a process of adding more skills. While simply adding tasks to the jobs of radiographers did not constitute development of practice she believed that role extension provided a potentially quantitative and qualitative leap toward it. She contextualised this in a discussion of

the relevance of teamwork among radiographers, radiologists, oncologists, nurses, physics and support staff, contending that expansion and development of radiographers' roles demanded a critical approach to team working. It was necessary not only to evaluate radiographers' roles but also those of others in diagnostic imaging and oncology teams if an effective service was to be provided to patients. Hogg (1993) examined role extension and role expansion, defining role extension as adoption of new responsibilities considered to be above the current status level of individuals, possibly arising from limitations of initial qualification education and training. Role expansion was defined as addition of duties that could be performed at an existing level of education, responsibility and training. Such tasks could be considered as those preferred at the same or lower levels of responsibility. Price et al (1997) concluded that role extension should be used to describe a transitional process since, over time, tasks could become adopted within a profession's scope of practice. Snaith (2004: 4) added to the confusion by using three of the terms when discussing an attempt to offset the shortage of radiologists by 'improving the skill mix and further developing role extension activities'. While Paterson appeared to be adverting to some sort of Benner-like, stage based transformation of the competence type, Hogg and Price et al were immured in the combination of hierarchy and qualification discourse that has also characterised nurses/ professional mobilisation and Snaith is simply lost round the terminological mulberry bush.

Skill mix and role development issues have long been discussed by those concerned with the NHS. As far back as 1990 Price remarked, in his presidential address to the Society of Radiographers, that fundamental changes being introduced into the National Health Service 'will inevitably influence the way in which the role of the radiographer develops'. The 1990 NHS and Community Care Act produced a climate in which traditional methods of delivering health care were challenged, resulting in the blurring of professional boundaries (College of Radiographers, 1996b). Further radical changes have taken place over the last few years and are felt to be likely to continue. Their main impetus has been shortage of radiologists, combined with the presence of a 'new breed' of graduate radiographers. At the same time, activity in radiology departments has continued to

increase (Royal College of Radiologists 1993a), creating difficulties in providing levels of radiological services which providers, purchasers and patients deem to be desirable (McKenzie et al., 1998). Requests for specific examination have exceeded the availability of radiologists who have, in turn, expanded their activities to encompass interventional services. Working practices have been modified and radiographers have been undertaking examinations traditionally regarded as the domain of radiologists. In 1996 The Royal College of Radiologists (cited in McKenzie et al 1998:17) explained its view on skill mix, reiterating that:

> 'The Royal College of Radiologists has stated on a number of occasions recently its support for changes in skill mix by the use of proper delegation. The need to make best use of resources is evident from the increasing disparity between the need for radiological services and the availability of clinical radiologists to meet this demand'

Specialised imaging suites have for some time employed radiologists, radiographers, nurses and support staff, with certain procedures also requiring anaesthetists and cardiographers, whose efficient team work has relied on in-house training concerning equipment and work practices essential for all the staff groups (NETRHA 1994). The College of Radiographers (2003b: 5), recognising the need for greater collaboration between healthcare professionals, commented:

> 'Radiographers have a duty to work in a co-operative and collaborative manner with other professional staff and carers in the interests, and with the consent, of their patient(s) except where there is a legal requirement to do otherwise. Multi-disciplinary team working has been demonstrated to be beneficial to patient care and has been adopted widely across the NHS. Radiographers must co-operate and communicate effectively with professional colleagues and other carers to ensure that patients receive the highest possible standards of care in line with the Caldicott principles. Radiographers have a responsibility not to undermine or bring other staff into disrepute, but to report professional performance issues or concerns to an appropriate person or authority. However, working within a multidisciplinary

team, radiographers must only undertake those tasks for which they are competent and for which appropriate patient consent has been obtained. In cases where radiographers' professional opinions and beliefs differ from those of other healthcare professionals, radiographers must work co-operatively to resolve these differences without compromising their professional opinion. Working within the multidisciplinary team and employers' guidelines/procedures radiographers may discuss with patients the outcome of a medical imaging or therapeutic procedure'.

The Department of Health (2003a: 7) report on the four tier service delivery model *Radiography Skills Mix*, which we explore in detail below, is predicated on 'developing roles and responsibilities' and, like many other authors whose work we have addressed, appears use the terms interchangeably, even synonymously.

Guarding boundaries: power and control

Despite the growth in diagnostic radiology and shortage of radiologists there appears to have been reluctance on their part to delegate tasks, some more than others. While Tennant (2000) remarked that, although many members of the medical profession regard themselves as heads of hierarchies within the NHS, a flatter, team based structure had become more widely, though not always, accepted over the past 20 years. Many radiographers continued to feel accountable to radiologists who were the decision makers regarding practices and whose status and power was considerably higher than theirs. The Royal College of Radiologists (1993b) produced reminded its members that shortage of radiologists required delegation of their tasks. Furthermore, the Welsh Scientific Advisory Committee (1995:49) produced its *Report on Radiology Skill Mix in Wales* concluding that 'The professional practices of radiologists, radiographers and helpers must change. The real issue is not one of if, but when and how'. The Royal College of Radiologists and the College of Radiographers (1998) recognised that multi disciplinary health care had seen a gradual breakdown of role boundaries and acceptance by most professionals that provision of a high quality service was dependent on a team approach The traditional roles of practitioners within health care, whereby certain

duties could only be carried out by specific professionals, had gradually become less easy to justify and it was becoming increasingly difficult for one profession to claim ownership of a particular discipline. The Department of Health (2000a) suggested that health professions removed unnecessary demarcations and introduced more flexible training and work practices. It would appear there has been both resistance to change as professionals have attempted to expand their scope of activity and control yet protect their own domains, while acute shortage of radiologists and radiographers has helped to overcome some of the resistance to change and has given impetus for more radical approaches to collaborative working (Doyle and Cameron, 2000).

The *NHS Plan* (Department of Health, 2000a) and *Meeting the Challenge* (Department of Health, 2000b) gave impetus to the 'modernisation of roles' within the NHS. The creation of NHS trusts and internal markets have provided managers with an environment where there was need to examine the ways in which departments were staffed. Brindle (1997) commented on the national shortage of consultant radiologists in the UK, stating that there were 52 known vacancies for consultant radiologists and while, in 1996, there were 149 posts advertised in England and Wales only 69 registrars completed training. The number of trainees has not increased significantly since then because of lack of funding and shortage is likely to remain acute for several years. Increasing workload pressures and acute shortages of key staff have, then, been some of the drivers toward implementing skill mix changes.

Kletzenbauer (1996) defined skill mix as the balance between trained and untrained, qualified and unqualified and supervisory and operative staff within a service area, as well as different staff groups, believing that skill mix or work profiling was viewed by managers as a way in which substantial savings could be made on unit labour costs and might, therefore, be treated with professional scepticism. As we noted in Chapter One, this pressure has been widespread throughout the public service and elsewhere and 'scepticism' may have deep historical roots and may even be better described, in some instances, as bitter turf-warfare. It may be deeply entrenched in class and status differences, themselves hiding economic interests,

as in recent British decisions to give solicitors access to some traditional advocacy rules formerly reserved for barristers. Or to consider teaching again, it is impossible to understand some professional associations' hostility to extending the role of classroom assistants without reference to long struggles over requiring compulsory training, then graduate status, particularly for primary school teachers themselves. In medicine, addressing problems of doctors' qualification continues to be deeply contested, not least by consultant interests. Better qualified nurses, themselves aggressively used in national policy arenas and having accepted extended grade differences, continue to nudge their way into more consultant roles, particularly where doctors find their own work inefficient of time or irksome, as in GP practice and in community work generally. 'Debates' in all of these areas tend to become deeply complex mixtures of the economic and technical, often firmly wrapped in ideological and rhetorical positioning. Seifert's (1992) identification of a need in the NHS to keep costs to a minimum to remain competitive, both in internal market terms and with respect of claims on public expenditure, with staffing accounting for over two thirds of overall costs, is difficult to ignore.

Coombes and Green (1989), in anticipation of the trend to involve radiographers in traditional radiologist-performed tasks, had felt that changes in staffing levels and working practices might be met with scepticism as some work became deskilled, with reduction in the quality of the service provided. Yet, despite some opposition, such change has occurred as a result of what is usually referred to in official discourse as growth in need and service demand. Chapman noted in 1997 that role expansion had already started, both as traditional roles developed through technological advancement and improvements in practice and with the adoption of roles previously carried out by other health care professionals. The degree to which the latter ('role development') is (and was) occurring is variable between departments. Snaith (2004) found that often new roles tended to be sanctioned in order to solve immediate problems and highlighted the need for them to be justified, effective and supported by an appropriate culture. The 1990's were characterised by profound economic, organisational and technological pressures for change, as well as social and political pressures for reform of public services (Watkins et al.,1996). As a result an environment was been created that required professionals in all

sectors to face the need to change their working practices as new, more flexible, organisational structures were introduced. Some ten years on, it would appear that progress has been slow among radiographers in some areas. Hogg (1993) recognised that role extension could cause resentment between professional groups, especially those losing responsibility, which could account for its lack of significant advancement. Saxton (1992) suggested that appropriately motivated radiographers could operate effectively in selected parts of radiologists' field,: reporting on mammography screening; reporting on accident and emergency films; a wider role in abdominal ultrasound scanning; barium enema studies; intravenous injections for intravenous urography and computed tomography injections, provided they were given proper training and supervision.

Hogg (1993) questioned the emphasis placed by some on extending clinical roles, drawing attention to radiographers' involvement in routine equipment testing which was previously the domain of physicists, suggesting that 'role development' for radiographers was not focussed entirely on radiologist-led areas. Radiographers work was expanding into areas traditionally the province of others outside of the imaging department, such as information technology, requesting examinations, prescribing, counselling and line insertion. Some of these areas required radiographers to exercise skills acquired outside of long established professional boundaries yet which benefited patients by providing continuity of care. Examples have included radiographers counselling ultrasound patients, inserting lines under x-ray control, requesting further or alternative imaging examinations and developing computer systems to aid in recording patients details and reports. While we have described these activities as skill mix it must be remembered that they may also be considered as role development since many require the acquisition of high level skills, such as those described. The Welsh Scientific Advisory Committee (1995) examined the way in which roles within radiology departments were changing. At that time, the main areas in which radiographers were 'developing' their roles were intravenous injecting, barium enemas, red dot identification system, plain film reporting and ultrasononography. Radiographers believed that with appropriate training they could perform such techniques traditionally within the domain of radiologists. The Committee noted that support from radiologists was mixed yet,

while most were in favour, some very strong opinions against the development of radiographers' roles were expressed. At the same time, the General Medical Council (1995) supported delegation of medical responsibilities to other professional groups so long as doctors ensured that such staff were competent and, within a few years, the Royal College of Radiologists in conjunction with the Society and College of Radiographers (1998) had made clear their support for radiographers' role development. As a positive example of the possible, McKenzie et al (1998) and O'Connor and Butler (1999) demonstrated that radiographers performing barium enemas improved patient experience in comparison with radiologist-led examinations. As we record below, this presaged a number of such comparative analyses.

Price et al. (2002) surveyed 172 departments and found that radiographers were involved in intravenous injecting in 161 (94%) of them. The second most common activity 'developed' was involvement in red-dot schemes (82%), with ultrasound reporting being undertaken in 72% and barium enemas 69% of departments. Moreover, radiographers undertook appendicular skeleton reporting in 25% of departments, barium enema in 20%, axial skeleton 12% and mammography 10%. However, once more, the numbers of radiographers involved and the extent to which these activities contributed to the overall delivery of service was not documented. For example, one radiographer in a department doing one list every three weeks would have been recorded as 'the same' as if, several radiographers performed six lists a week. While providing a useful guide, Price et al.'s study failed to demonstrate the extent to which 'role development' activities, defined as the number of staff involved in them in each department, were being carried out and concluded that role development activities were 'not exactly the norm' (p.231), though becoming increasingly common practice. Paterson (1995:12) had undertaken a similar study including nearly twice the number of departments (333), noting that radiographers were involved in a wide range of role development activities and commenting that '(S)ome of these, arguably at least, are contentious in nature.' which she later identified as radiographers issuing reports. Price et al (2002) and Paterson both considered 'opposition by radiological colleagues' (Paterson 1995: 16) to be a major contributory factor in the tardiness of

radiographers' 'role development'. Reporting had, in particular, not progressed as much as other areas. Nonetheless, Tennant (2000) considered that many radiologists had recognised that tasks regarded as the sole remit of those who were 'medically trained' could be performed as well, or better, by other professionals.

In the struggle over professional boundaries many seem to have forgotten patients. White and McKay (1999) suggested that guidelines should be established to ensure that radiographers had skills and knowledge on a par with specialists in their areas of practice to ensure maximum patient benefit. Officially, a patient focused approach was well articulated by the Department of Health (2000c), noting that the provision of health services should depend on the abilities of staff not their job titles.

A great deal of the literature on 'development' and 'mix' has focussed upon the specific movement of radiographers into reporting, barium enemas and injecting. We now turn to these in particular.

Reporting and red dotting

The Royal College of Radiologists commented (1993c) that there was a serious shortage of doctors in oncology and radiology which was not likely to be solved by increasing numbers of medical practitioners in the two disciplines. In an attempt to solve this problem the Royal College suggested that a substantial degree of independent reporting of technical findings could be delegated. The Audit Commission Report in 1995 expressed dissatisfaction with some aspects of the reporting service provided by clinical radiology departments, finding that reports were not provided for all examinations carried out and that a significant percentage of them were not received in time to influence patient management. Fielding (1990) found that some radiologists considered plain-film reporting a chore that cost senior accident and emergency doctors valuable time in cross-checking diagnoses of junior medical staff. Tennant (2000) recognised how shortage of radiologists stimulated a re-evaluation of attitudes about the reporting of plain films by radiographers in many departments across the country.

Reporting by radiographers is not new; they have always given their professional opinions, at least verbally, on images they have produced. Sonographers have for many years written reports for ultrasound examinations performed, their main 'role development' activity identified by NETRHA (1994), senior radiographers usually sending them directly to requesting clinicians, without radiologist intervention. The Department of Health (1993) reported that radiographers' aspired to greater degrees of responsibility, as well as participation in research, normal and abnormal pattern recognition and involvement in a wider range of imaging techniques and modalities. It specifically recommended that radiographers should play more part in evaluating images.

The red dot signalling system has also been in operation for some time in the sense of radiographers giving verbal reports but it is only recently that they have been provided in writing. Many are now involved in a system where an abnormality on an image is indicated by the use of a red label attached to the film packet or image. This arrangement usually occurs in accident and emergency departments where inexperienced medical staff can be guided by more experienced radiographers, whose success in this area has long been established. Cheyne et al. (1987) demonstrated a 98% radiographically detected abnormality rate, up to 25% of which would otherwise have gone undetected. Considerable concern was expressed by Fielding (1990) about developing this system in terms of written radiographic reports, pointing out that reporting of accident and emergency radiographs has a low priority in many departments and is not usually feasible out of hours. He believed that making such reports, while improving the job satisfaction of radiographers, should remain the province of radiologists. Brealey et al. (2002a) came to a different conclusion, their investigation of healthcare professionals' attitudes towards radiographers reporting accident and emergency films concluding that all groups found the process acceptable, though opinions were sought from only two radiographers, three radiologists and two accident and emergency consultants on the number of films reported, film reading performance, timeliness of reports, cost-effectiveness, satisfaction with the existing reporting role of radiographers and its further extension. Understandably the two radiographers had a more positive

view of their contribution than the other two groups who were sceptical about extending their reporting role. One radiologist had an overall negative score, stating that radiographers' reports were not as comprehensive as those of radiologists. Radiographers believed their reporting was 99 or 100% acceptable, while radiologists' opinion rated them only 50 to 90% acceptable. Accident and emergency consultants agreed that reporting by radiographers was acceptable while radiologists were less certain, claiming that it only freed up a small amount of their time. On the other hand, radiographers found reporting time consuming, taking up to 50% of their time, unsurprising since two radiographers were doing reporting normally shared between seven or eight radiologists. Since the sample size was small (n=7) and the study was based at a single hospital no major conclusions can be drawn but it did suggest that accident and emergency consultants were more positive regarding radiographers' involvement in accident and emergency film reporting than radiologists. Brealey et al. (2003) subsequently compared the reporting abilities of two specially trained radiographers and eight consultant radiologists. All reported on a retrospectively selected, randomly stratified sample of 400 accident and emergency and general practitioner plain radiograph x-ray examinations for all body areas. There was no statistically significant difference between the two groups which led to the conclusion that it was feasible to expand reporting by suitably trained radiographers. A reasonable comparison could not have been made if the performance of two radiographers was compared with that of eight radiologists. We might suggest that if the performance of two radiographers and two radiologists was compared radiographers performance might have exceeded that of radiologists.

An audit of 202 routine abdominal and pelvic ultrasound examinations was carried out by Lo et al. (2003) in order to evaluate the clinical performance and interpretation of these scans by radiographers compared with radiologists. Each scan was performed first by a radiographer and then subsequently repeated by a radiologist, a permissible procedure since ultrasound is not known to have harmful side effects, while a similar study could not be made using ionising radiation. The findings were subsequently compared and discrepancies resolved either by rescanning with or without the involvement of an independent radiologist or by

following up of patients with other imaging studies. In 78.2% of scans there was complete agreement between radiologists and radiographers' and in 21.8% incomplete agreement. Overall the accuracy of radiographers was 92% and radiologists 91.7%. However, accuracy rates were 94% (radiographers) and 96.4% (radiologists) when minor abnormal findings without significant influence on patients' clinical outcomes were excluded.

Hogg (1993) compared the reporting performance of a nuclear medicine superintendent radiographer with five years full time experience but who did not routinely report with clinicians' reports which were taken as the gold standard. The superintendent reported on images without knowledge of initial reports. The superintendent, who had no special education and training in reporting, performed well. Overall sensitivity (ability to detect all lesions) was 94% and specificity (ability to indicate correct/ lack of pathology) was 92%. The results were highest for brain and thyroid scans with a specificity and sensitivity of 100%. Least accuracy was achieved with liver scans with a sensitivity and specificity of 78%. The results prompted Hogg to undertake a further study in which 29 bone scans were reported by three radiographers of varying nuclear medicine experience, the radiologist reports of which they had no prior knowledge again being taken as the gold standard. The radiographer with 14 years specialist experience scored 100% sensitivity and specificity, one with nine months part-time scored 97% sensitivity and 90% specificity and the third radiographer, with no nuclear medicine experience in the past ten years, scored 90% sensitivity and 55% specificity. Unsurprisingly, those with more nuclear medicine experience showed greater expertise and accuracy in reporting and Hogg drew the conclusion that there was scope for radiographers with differing levels of experience to report in this area.

Price et al. (1997) noted that only a minority of their respondents provided a verbal comment on image appearance, marked films of special interest and wrote reports on image appearances. However, those who did mark film of special interest ('red dotting') categorised it as 'essential' to radiographers' roles. While just over half considered the red dot scheme to be good practice no figures were presented as to their participation. Price et al. noted that many had been introduced to the system as

students and now saw it as 'the norm'. Despite their lack of current activity in this area the majority of them felt that radiographer reporting on casualty films would be normal practice by 2005/2006. Anecdotal evidence indicates that its incidence is patchy and certainly not widespread. In 2002 the Audit Commission found that only 5% of accident and emergency images were reported by radiographers and there has been little progress in the ensuing three years. The advantages of reporting trauma images have been discussed for at least twenty years. De Lacey et al. (1980) showed that casualty officers failed to recognise and subsequently treat over 2% of injuries which required it; Renwick et al. (1991) recognised that radiographers could offer advice on radiographs to casualty officers, while McConell et al. (2000) found that over 85% of accident and emergency departments were using such a system. Almost half a century after De Lacey et al., Hargreaves and Mackay (2003) were pointing out that radiographers, although lacking formal training in the interpretation of trauma appearances, had a much greater experience of viewing radiographs than others. During their three year initial education radiographers learn to interpret images for quality and normality. When an abnormality is detected they are able to decide what, if any, further images are required. After formal training in 'red dotting' images in an accident and emergency department, the seven radiographers participating in their study had an average accuracy rate of 93%.

Sonnex et al. (2001) compared the accuracy of radiographers in identifying abnormalities on chest radiographs. Radiographers were cautious, especially when previous reports or images were unavailable and applied red dots to some normal films and consequently a high false positive rate was noted. In spite of this a sensitivity of 90% and a specificity of 99% were noted. Similarly, Pauli et al. (1996) found that trained radiographers could read mammograms to a standard comparable with that of radiologists, while their performance in reporting in this area was found to be equal to that of radiologists by Robinson (1998).

Barium Enemas

The practice of radiographer-led barium enemas was suggested as early as 1981 by Somers et al., though reporting on such examinations remains the responsibility

of radiologists (Price et al., 2002). Working practices were being modified to meet the demands of the service, though some radiologists were found to support (Chapman, 1992) and others were sceptical (Simpkins, 1993) of the practice. Mannion et al. (1995) and Law et al. (1999) came to the conclusion that radiographers could adequately perform such procedures. While their accuracy was satisfactory and comparable to those of radiologists, Crawley et al (1998) reported that while radiographers tended to become more confident as their experience, particularly of reporting, grew, increased radiation doses were received by patients because of extra films taken for reporting. McKenzie at al. (1998) reported that radiographers undertook barium enemas in 83% of the hospitals which they surveyed under the supervision of radiologists who retained overall responsibility for examinations and patient care. Culpan and Chapman (2002) performed a retrospective study of histological proven cases of colorectal cancer to assess whether the sensitivity of radiographer-led barium enema studies differed from those of radiologist-performed ones. Sixty four of the cases reviewed over a three year period were performed by radiographers and one hundred and seventy five by radiologists. Radiographers made a correct diagnosis in 90.6% of the cases while radiologists' accuracy was 89.7%. While the sensitivity of the two groups is comparable, the difference in the number of cases reviewed may have influenced the result.

A comparison between radiographers' and radiologists' reports was made by Murphy et al. (2002). Two especially trained, experienced radiographers performed 788 barium enemas over a two year period. Seven consultant radiologists were involved in supervision and formal reporting. The number of cases for each radiologist varied and ranged from 307 to 14. Radiographers attained a higher level of accuracy when they reported on the enemas that they performed their provisional reports being concordant in 753 (95.5%) of them with those of radiologists, with only minor differences demonstrated. The study concluded that experienced radiographers attained a high level of accuracy and their greater participation in diagnostic evaluation was feasible and might help alleviate radiologist workloads. They also reported that radiographers still relied on radiologist

input in more challenging cases, being reluctant to make diagnoses of colo-rectal cancer without reference to them as its implications were considerable.

Injecting

Just over half of the sample interviewed in Price et al.'s (1997) work presented positive views about radiographers giving IV injections although, as we shall see presently, unlike those in this study, they did not feel that new graduates should be trained for this procedure. But, as we noted earlier, Price et al. did not indicate how many staff were involved in giving intravenous injections. Paterson (1995: 12) reported in a similarly imprecise way that 'not insignificant numbers of departments use radiographers to give intravenous injections, particularly for intravenous urograms, computed tomography and radionuclide imaging investigations'. They found that the most common 'role development' activity undertaken by radiographers was injecting CT examinations, which occurred in 25% of the departments in their sample, injecting in radionuclide imaging occurring in 24%. Again, they failed to identify the number of radiographers involved and examinations per department making it was impossible to determine radiographer involvement accurately. Keenan et al. (2001) also considered performing intravenous (IV) injections as part of radiographers' 'role development', regarding them as fundamental to the operational management of diagnostic imaging departments in the UK. Since patients may have adverse reactions to contrast agents Keenan et al. suggested that they should keep their resuscitation skills up to date, attending cardiopulmonary resuscitation courses annually.

Halting Progress?

While some changes have been made it is equally evident that radiographers' 'role development' has been slower than might have been anticipated at several points over the last fifteen years. The literature has indicated that healthcare professionals, including radiologists, have been generally unwilling to devolve tasks and functions although professional bodies, in this case for both radiographers and radiologists, as well as governments, have supported such

activity. Perhaps a different outlook is required, such as that suggested by Craven and Barber (1995), who commented that the idea of an extension of radiographers' roles could be replaced by acceptance of a new view of the profession that does not intrinsically imply that its members are performing tasks for which they are not equipped. While radiologist support has appeared vital for radiographers' role development; evidence based practice, increased participation in research and the introduction of the four tier structure may be the influences required to move radiographers' work and status forward. Very recently it has been official intention to drive through the introduction of a four tier structure, paralleling changes in other areas of public service labour markets, for example in nursing and teaching, attempted to flexiblise them in greater degree, making their boundaries more permeable, not least to easily, even minimally, trained, less expensive employees, that has been to be of the greatest urgency, raising fundamental issues concerning both professional status and skill mix.

The Four Tier Model of Delivery

In 1996 Kletzenbauer examined radiographers' attitudes to skill mix changes, distributing a thirty seven point questionnaire to them in ten departments. Of 154 respondents, 35 (23%) were managers. It was found that diagnostic radiographers' had an overall negative attitude to the concept of skill mix, with those in managerial grades being slightly more positive than those in clinical grades. The majority of respondents were in favour of up-skilling their own work and had no objection to the entry or use of lower grade staff, providing that their work did not impinge on their job territory. Skill mix changes were seen as part of managerial reform and not as technological advancement. *Working together, Securing a Quality Workforce for the NHS* (Department of Health, 1998) recognised that staff needed to be fully involved in processes of change if 'modernisation' of the NHS was to succeed. The challenge, as expressed by Nixon (2001), was to recruit and retain a workforce that was diverse, flexible and able to meet overall service needs. It was not until 2003 that the Department of Health produced a career progression model which encouraged new ways of working for existing staff and introduced the new role of assistant practitioner. However, its emergence coincided with the introduction of

Agenda for Change (Department of Health, 2003b) and its linked grading system, causing a degree of confusion among radiographers. *Agenda for Change* was to replace current Whitely grades of Radiographer, Senior 2 radiographer, Senior 1 radiographer and Superintendent I-IV with eight pay bands on a new NHS pay spine. The change was to be made since it was felt that grading definitions did not necessarily or sufficiently reflect responsibilities. The highest salary that many clinicians could earn was £27,000, at the top of Senior 1 and too many assistants were unable to progress through the grades.

The four tier system was presented as being directly prompted by the requirements of the *NHS Cancer Plan* (Department of Health, 2000e), aimed at reducing mortality and improving cancer services. Achievement of these aims was argued to entail a commitment to expand capacity through investment in the workforce and equipment and to reform service delivery (Richards, 2003). These impacted directly on radiographers. Extending the Breast Screening Programme to include women aged 65-70 years and reducing waiting times for diagnosis and treatment of all cancers, defined as high policy priority, necessitated increase in the radiographic workforce and new models of service delivery. The Radiography Workforce Team was established to manage this work, focussing on strategies for improving radiographer staffing levels and overseeing the development and piloting of a new career structure based on the four tier model. The skill mix programme initially focused on breast screening was very quickly extended to include radiotherapy and clinical imaging

Radiography workforce issues characterised by world shortage of radiologists and radiographers, with large percentages of part time staff; high turnover among a current working population approaching retirement age and need to 'remove blockages' occurring within general diagnostic processes were identified as being critical. These were represented as coinciding with pressure from radiographers to develop effective career development pathways, making the need for change auspicious (Department of Health, 2003a). It was presented as a 'principle' of the envisaged four tier model that it should be implemented as a whole and not piecemeal, though not on a common time scale throughout the UK. This

meant that at the time of conducting this study some universities had already commenced courses for proposed assistant practitioners and it became evident that the number of consultant practitioners in post were very few and thought to be likely to remain so well before many areas had begun implementation. Radiographers, radiologists and oncologists all sought reassurance that imposition of the model would not lead to dilution of professional standards and scope. Principles were outlined for three service areas: breast screening; therapeutic radiography; and diagnostic radiography (including sonography). These involved re-structuring the entire clinical service according to essential roles, skills and experience required, the nature of new roles being determined by the skills and competencies required of the whole clinical team. Standards of practice were to be identical across the disciplines involved, set in a four tier, multidisciplinary model designed to shape clinical teams around client and care requirements, rather than professional boundaries, The model was to be tried, tested and implemented as a whole and not in single tiers, offering radiographers an extended clinical career, developing roles and responsibilities beyond those conventionally associated with radiography. New or existing staff were to have opportunities to develop clinical skills which were transferable and equitable, with further career development. To ensure this, competency frameworks and occupational standards were to be developed to inform curriculum design for each profession and discipline operating within each of the four tiers.

The model was piloted in breast screening, followed by radiotherapy, then clinical imaging, some two years later. The aims of the projects were to: redesign clinical teams by skills and experience, rather than by occupational group or profession, introducing a tiered structure incorporating mechanisms of lifelong learning and increase in skills; developing occupational standards for clinical aspects of each service; and reviewing and implementing educational and learning processes to enable practitioners to develop new and valued roles within the multidisciplinary teams. Staff attitude surveys demonstrated that original disquiet had been superseded by enthusiasm and determination to see the model introduced widely. (Department of Health, 2003a).

The official definition of the 'four tiers' that emerged on the basis of the principles laid down by the Department of Health (2003a:11) were:

i) assistant practitioner, where individuals were to perform protocol-limited clinical tasks under the direction and supervision of state registered practitioners;
ii) practitioner (state registered), where they would autonomously perform wide-ranging and complex clinical roles, be accountable for their own actions and for those they directed;
iii) advanced practitioner (state registered), autonomous in clinical practice, defining the scope of practice of others and continuously developing clinical practice within a defined field; and
iv) consultant practitioner (state registered), providing clinical leadership within a specialism and bringing strategic direction, innovation and influence through practice, research and education.

Preceptorship, clinical supervision and continuing professional development were to ensure that the new and extended roles prospected were appropriate to the integrated skills-requirements of clinical teams . Preceptorship was to be a short term process of support and guidance provided for qualified individuals during the early stages of new or different roles, available until individuals were confident and able to act independently, playing a different, yet complementary, role to clinical supervision. Clinical supervision was to be thought of as an ongoing, supportive process throughout career, by which qualified, independent practitioners benefited from peer support, review and guidance directed towards maintaining and developing excellence and independence in a particular role. Continuing professional development was to be a personal activity encouraging individuals to maintain competence in their current roles and preparing for professional advancement, requiring reflection on current practice, as well as learning in areas indicated by career and personal ambition. Staff members would be required to record their CPD in a portfolio, used during appraisal processes.

Practice Implications

It was proposed that assistant practitioners would contribute to patient care by undertaking relatively less complex examinations under the supervision of state registered colleagues. By assisting in the delivery of appropriate care they would release practitioners to attain 'additional skills' for the benefit of patients. These 'additional' skills were regarded as constituting 'role development' into areas hitherto undertaken by radiologists. Assistant practitioners in radiography were to act as Operators under the Ionising Radiation (Medical Exposures) Regulations (IR(ME)R) (Department of Health 2000c). In breast screening, assistant practitioners have now been trained to perform basic mammographic projections, as well as supporting other members of the clinical team in other procedures. Some universities offer courses for assistant practitioners reflecting occupational standards defining the role incorporated in the NVQ Diagnostic and Therapeutic Support and the occupational standards which cover clinical functions of acquiring images. Assistant Practitioners involved in pilot studies were trained to undertake one or more plain film examinations, commonly of chests and extremities. Some covered a wider range of plain film examinations although these were not identified by the report. In one centre assistant practitioners performed 40% of plain film examinations, in all cases supervised by registered radiographers (Department of Health, 2003a). Some assistants have begun to enter undergraduate programmes to become registered practitioners. Betts et al. (2003) noted that in late 2001 assistant practitioners had been introduced to undertake limited practice radiography under direct clinical supervision, initially performing appendicular skeleton and chest radiography for patients over 5 years of age. By 2003 their practice had been extended to include shoulder girdle and non-trauma cervical spine examinations, working alongside registered practitioners in general rooms in x-ray departments. Supervising practitioners justified examinations and checked images before patients left the department. Betts et al reported that without the introduction of assistant practitioners there would have been insufficient staff to work in the chest x-ray room which they studied. Their introduction spread the workload of the department, reducing radiographers' stress and workplace pressure

In the new terminology, practitioners were current radiographers without 'role development' skills undertaking a wide range of simple and complex imaging examinations on the full range of patient types and conditions as Operators or Practitioners under IR(ME)R. They were seen as working independently in a variety of settings, supervising students and other clinical professionals, extending their roles according to local needs and contingent continuing professional development decisions. They might be involved in students' clinical training and pursue specialised or developmental roles. The Department of Health (2003a: 16) noted that practitioners were to be regarded as 'fit for purpose, fit for practice and fit for award', registered with the Health Professions Council. In contrast, advanced practitioners were seen as those working in specific clinical areas requiring expert skills, delivering specialist care to patients. The Department of Health (ibid) defined their role as also being to develop other staff, demonstrate team leadership and contribute to the evidence base and service improvement. They were to have skills, such as the reporting of plain films, computed tomography, magnetic resonance imaging, barium studies, ultrasound examinations and bladder pressure studies. Advanced practitioner skills might also include line insertions. On the top tier, consultant job descriptions were regarded as being developed in response to service needs. Consultants were to be required to provide leadership, specialist and expert clinical skills and would normally be expected to be working at Masters' Level, many having already achieved a Masters' Degree or Doctorate. The Department of Health (ibid) described the role of one consultant radiographer in neuroradiology at a development site for the skills mix project as managing a patient caseload and determining future investigation and care during a two year follow-up period, requesting further procedures and interventions, as necessary. Patients who had received embolisation treatments were referred to this consultant, rather than to a neurosurgeon.

This four tier model and its implications for skill mix are relatively new concepts and it was not surprising that our study has found little support for its introduction. As with most of the United Kingdom, assistant and consultant practitioners had yet to be appointed in the area where the three departments upon which we focussed were located. Scepticism regarding assistant practitioner and consultant

radiographer roles was somewhat balanced by enthusiasm for consultant practitioner roles, which are easily identifiable by most radiographers. However, significant numbers of consultant radiographers were appointed and/or radiographers' role development became accepted practice on a widespread basis, it appeared that our respondents, delineated in the next chapter, were likely to remain cautious of the role of and place for assistant practitioners.

Summary

The literature has demonstrated that considerable confusion surrounds the meaning of competency and how it relates to radiographers' practice, particularly when considering the influences of current changes in the delivery of healthcare. Conflicting views exist on requirements for clinical competence making it impossible for radiography educators to be certain that graduates are ready to practice in changing environments. An examination not only of the views of clinical radiographic staff on competency and professional preparedness appeared to be strongly indicated, along with clearer analysis of what they actually did on a daily basis, as a means of clarifying what radiography education needed to do to ensure an appropriately educated, entering workforce. In turn, issues of what is to count as competency and constituting current roles have to be set against those of 'role development', which we have seen mainly connotes taking over desirable parts of the repertoires of others and 'skill mix' issues, which require greater flexibility toward job content, including parting with some to others really or putatively less qualified, as well as in inter-professional manners. All of these need to be addressed appropriately in terms of undergraduate and postgraduate education and training.

The further empirical work which has been designed as part of this study has been oriented to gain further insight on these issues and should illumine specific problems, such as what point radiographers should be regarded as competent to practice and in what areas. Specifically, should radiographers be competent to practice in all areas, including specialised techniques when they first qualify? Should this competency be confined to specific areas, for example plain radiography or is competency in some or all of the areas that we have seen coded as

'developmental', a handy term for rendering encroachment 'natural', or even desirable, or else to be achieved at a later stage? There also appears to be disparity in the practices that are considered as 'developmental' and which constitute 'skill mix'. The overarching current influence that will facilitate or inhibit change in radiographers' work, autonomy and control is the detail of the implementation of the four tier system. The literature suggests that radiographers are lagging behind other professions, particularly nurses, in embracing powerful, new official dispensations. Either they are reluctant to develop or, as suggested by Price et al, Paterson and others, or are being protective of their own scope of practice, freezing the inclinations of radiologists, in whose grip they have long been, to embrace change. Other possible influences, such as the geography and political climate of departments, as well as radiographers' lack of confidence or expertise, particularly in the face of possible intrusion of less qualified staff undertaking traditional radiographer-performed examinations, also need consideration. In the next chapter a rationale is attempted for the choice, following a number of false starts, of three contrasting sites for the comparison of the roles and attitudes of radiographers and managers toward their established work, the changes in hand or in prospect and their bearing upon training policy and practice.

Part Two

Chapter Four
Methodology

Introduction: defining the field

A data collection method was needed which would enable elicitation of radiographers' feelings, perceptions and thoughts about their work, in addition to producing evidence of what it entailed. It was anticipated that its collection would constitute the greater part of the fieldwork period. While this information would have value in its own right, I also wished to establish whether respondents thought that the knowledge and skills required in carrying out their current roles and their possible future elaboration was being met by undergraduate education. The methods of elicitation employed could not be too time-consuming in view of the understaffed and busy environment in which respondents worked. It was recognised that the opinions of those responsible for managing the service would also be required.

The studies that were identified in Chapter Three as those examining role developments in radiography had primarily used interviews and questionnaires to obtain information. As it was considered necessary not only to obtain information about radiographers' roles but also to gain insight into their opinions of what influenced them and ought to inform the radiography education of students, initially it was felt that data should be collected using interviews containing mainly structured and some open ended questions. It was felt that this would be a sound way of obtaining the mass of predominantly factual and descriptive information relevant to individual radiographers' patterns of work, while also gaining some access to their perspectives upon them.

Lessons from the literature

Several methods of data collection across many studies were explored to ensure their appropriateness. For example, Youngman's work (1979) on nurse teachers'

activities relied on volunteers completing a checklist of 454 tasks, with a cluster analysis programme being used to analyse the data. While Youngman was able to identify accurately the daily tasks undertaken by nurse teachers, it was felt that completion of a checklist would be too time consuming for radiographers and could compromise patient care. Willett and Hermann (1989) had found DACUM (Developing a Curriculum) and Information Search to be equally effective when considering job analysis as a means of exploring the competencies needed by secondary school teachers, while critical incident analysis was less effective. It was decided to explore these methods further to ascertain if they would be appropriate for our purposes.

DACUM was concerned with the development of competencies and utilised a workshop in which participants were asked to nominate general areas of competence. This was followed by identification of competencies in specific areas, commencing with the words 'must be able to'. As a structured, group-interview process, Holden and Lescop (1978) had believed that DACUM was useful in the examination of job flow and for the identification of triggering events where an interviewer was required to elicit statements from a group over several days. Hermann and Mottram (1989) modified this technique to be less time consuming, taking only six to eight hours, yet still found it difficult to obtain sufficient respondents to form a representative sample. I anticipated that job flow and identification of tasks would form only part of this study so that, while a group would have been useful in identifying elements of radiographers' roles, it was felt that the time required to acquire limited, relevant information was excessive, making the procedure not a viable option. The DACUM method is not dissimilar to the Delphi techniques described by Tarling and Crofts (1998) and used by Williams and Berry (1997), reported in the preceding chapter, as a method of obtaining expert opinion on a topic. The technique employs multiple 'rounds or waves' of questionnaires, with each round utilising information gathered during previous rounds in an attempt to converge on a group consensus. However, examination of individuals' roles in specified settings rather than consensus views of dubious provenance was required by this study, making a Delphi technique inappropriate.

Hermann (1987) had described the use of critical incident techniques (CIT) as involving the collection of data from events in the workplace perceived by employees as having crucial consequences, whether successful or unsuccessful. Similarly Kunak (1989: 44) defined a CIT as '(A) set of procedures for collecting specific incidents or events in such a way as to facilitate their potential usefulness in solving a practical problem.' An incident was described as an activity that was complete and from which a prediction can be made about the person performing the act. To be critical the incident must have taken place in a situation where the objective of the act was apparent to the observer and there was little doubt concerning its effects. The data collected using a critical incident technique would reflect actual events and separate facts from opinions or speculation.

When discussing the use of CIT, Hermann (ibid) described how a written format requesting at least one successful incident and one unsuccessful incident was devised. Respondents were asked to identify difficult and successful work incidents that they experienced. With regard to the latter, they were asked to:

i) describe the incident and the successful outcome;
ii) identify what contributed to that end result;
iii) state the training which contributed to that result; and
iv) identify the attitudes, knowledge or skills that led to success.

With regard to unsuccessful incidents, in turn, they were asked to:

i) describe the incident and the unsuccessful result;
ii) identify what contributed to the end result;
iii) explain what could have been done to have led to a more successful outcome; and
iv) state the specific attitudes, knowledge and skills needed to lead to a successful result in this type of work situation.

Critical incident techniques have proved to be effective in analysing the jobs of top managers, especially in regard to strategic decision making. Kunak (1987) found

that, based on a sample of 200 critical events associated with exceptional business growth or survival, over 40 factors was identified as inputs to strategic decisions. The technique, then, offers an opportunity to develop understanding of organisations and differentiate between forces that stimulate success and those that impede it. However Kunak suggested that the technique is seldom used due to the difficulty of and expertise required in analysing, coding, validating and integrating the accounts that it produces.

While CIT might have been of some relevance to this study, examination of isolated incidents might have also precluded gaining an overall impression of differences in radiographers' tasks and their contexts of, as well as their opinions on the factors influencing them. It might also have proved difficult for respondents to determine what a critical incident was, particularly considering the pressure that staff typically tended to find themselves working under. It appeared to have a greater place in the management of business contexts than healthcare environments.

An information search technique was used by Rayner and Hermann (1988) to investigate communication competencies needed in the workplace by mechanics, mechanic apprentices and tradespersons in their first year. A list of competencies was developed from the literature and professionals in a particular field. This list was then distributed to other relevant experts and further competencies added. A rating scale was used which indicated frequency of performance of each task and the relative time spent on it. I scanned the literature in a similar fashion to that adopted in this study and indulged in dialogue with leading professionals to determine what competencies needed to be explored among radiographers. But I felt that the opinions of clinical radiographers working in specific situations on a daily basis would be more up to date and relevant than both those of putative experts, possibly distanced from the reality of clinical practice or the existing literature taken alone.

Since the detailed measurement of competencies and daily tasks was not intended to be a major part of this study, most of the methods discussed in this section, though considered with great seriousness as ways of getting at an accurate, factual ensemble of data on activity and decisional structures were, for the most

part, reluctantly deemed inappropriate. Radiographers with busy work schedules, located in understaffed departments, as the majority were, would be unable to commit the time to complete lengthy checklists, as used by Youngman. Moreover, such methods as DACUM and CIT precluded investigation of practices and opinions of individual radiographers in specific settings necessary to obtain appropriately nuances profiles of radiographers' worlds, almost certainly only accessible through interview, with or without observation.

Looking for alternatives

Interviewing is one of the most common forms of data gathering in social science. Health professionals are used to interviewing patients as part of their everyday work, having conversations to elicit information about their condition and treatment. Burgess (1984) maintained that qualitative interviews are really conversations with a purpose and showed that many initial research interviews consist of informal questions and answers. Research interviews are more than conversations and range from the informal to the formal (Holloway and Wheeler, 1997). Unlike conversations they are set up to elicit information from one side only, so that an asymmetrical relationship exists (Spradley, 1979) however much interviewers attempt to achieve relationships of equality with participants. May (1991) told us that interviews can be formal, that is pre-planned for the express purpose of eliciting information but also that chance meetings and informal conversations with participants often generate important ideas for projects. Holloway and Wheeler noted that one-to-one interviews were the most common form of data collection in qualitative work and cited Melia (1987), who interviewed student nurses about learning their roles in clinical settings, acquiring her knowledge by talking to individuals.

Unstructured or much more widely used semi-structured interviews conventionally start with a general question pitched in the broad area of study. Semi-structured interviews are often prefaced by giving respondents a list of topics to be covered. This type of interviewing allows flexibility and makes it possible for researchers to follow emerging indications of interests and thoughts by interviewees.

Interviewers tend to ask questions of informants in a sequence or order that depends on responses that are followed up within the limits of researchers' own agenda, based on the aims and issues that they wish to explore. Control and direction of such interviews is never minimal, for interviewers run the risk of obtaining a great deal of irrelevant information if informants are free to answer unchecked and at great length. However, this type of interview approach permits achievement of real depth and detail in following a broad interview guide or agenda, rather than a tightly focussed schedule. Sequencing of questions need not be the same for every participant and can depend on how far answers constitute progress through the agenda. An interview guide ensures that researchers collect data on similar topics from each informant, developing questions and deciding which issues need to be further pursued. Interviews can be long and detailed, Burgess (1984) suggesting that the longer the questions, the longer their answers tended to be.

Completely structured or standardised interviews, while the norm in areas like market research or opinion polling, are rarely used by qualitative researchers since entirely pre-planned oral questioning offers little advantage over questionnaires though, even in un- or semi-structured interview contexts, closed and structured questions are commonly used to elicit 'face-sheet' or demographic data. Though making strong appeal as a way of reaching desirable levels of complexity or 'thickness' of description (Geertz, 1993), it was felt such methods would prove too time consuming when that available for face to face encounter with respondents would be strictly limited. The same information might have to be acquired from all respondents via questionnaire, allowing coverage of an increased number, with data being more easily collated and presented (Morse 1986). A questionnaire can comprise closed or open questions and serve to collect a wider range of data in a format which is relatively easy to process and analyse. The most reasonable use of time, given the aims which I wished to achieve, seemed to point to a research design that has probably achieved the status of the doctoral classic; questionnaire to a relatively large number of respondents, followed by interviewing a smaller group whose initial responses indicated theoretical or problem focussed 'interest'.

The same logic that impelled me to finally propose interviewing prefaced by questionnaire work also suggested that observation other than that incidental to my presence while conducting interviews and the interaction that occurred during the course of my student visiting was not feasible. Lindeman (in Bogdewic, 1992) described observation as the exploration of a culture from the inside. As Jorgenson (1989:15) stated '(P)articipant observation provides direct experiential and observational access to the insiders' world of meaning', originally used in anthropology and sociology in order for observers to become part of the culture being studied and facilitate investigation of actions and interactions of individuals in their social context. Although providing potentially reliable information on the tasks undertaken by participants, observation was reluctantly considered not to be feasible as my main data collection tool, as seeking opinions and attitudes was to be prioritised. This is not to deny that well conceived and constructed observation can produce insight that other methods can only approximate. Indeed, it is fully recognised that the relation of opinion and attitude to behaviour should be regarded as entirely problematic, even among well-meaning and cooperative respondents. Radiographers, no less than other mortals, are liable not only to say one thing and do the other but to do so in perfectly good faith. After much consideration and discussion, I decided that I simply could not muster the time to 'live with' or 'shadow' individuals to good effect, given the organisation and work structure of radiology departments. Additionally it was felt my presence in an imaging department might influence results, might not always be possible due to the nature of ionising radiations used and would also raise ethical issues regarding the confidential nature of patient interactions.

It could justly be levelled that all of these considerations appear to be remarkably 'methods' and only marginally 'methodologically' focussed. This must be freely conceded. Although pursuing this study has constituted my research training, involving exposure to a variety of considerations about the nature of social science and the relation of differing approach paradigms to epistemological issues about how personal and social realities may be fixed and tapped, using differing methods, my predilections and focus remained resolutely 'professionally' problem-oriented. I was very much the creature of my pre-doctoral upbringing, living in a relatively

unselfconscious world of task-orientation, measurement and the legitimacy of epidemiological research models. Attendance at research seminars, reading and tutorials made me aware of the apparent appropriateness, certainly for some research purposes, of privileging meaning, of prioritising the importance of trying to understand interaction in context. However, like many part-time, professionally driven educational researchers, I did not have the luxury of following the classic trajectory of extended pursuit of the literature and search for appropriate research modalities around an initial 'problem'. I know now the virtues of letting a problem be (re)defined by extensive, prior scholarship, drawing out from an immersion in appropriate theoretical and empirical antecedents a 'shape' for fieldwork and its specific components and procedures, showing down to the level of detail of instrumentation how conceptual rationales have informed data gathering and how analysis should be driven in the same manner. But, like many of my kind, I had effectively taken 'practical' decisions about where and how to specialise my fieldwork time long before I had such understanding and the realisation that I had to live with their consequences. I am now aware that what I must do, in an appropriate spirit of doctoral revelation, is to make all this apparent, displaying an understanding of its strengths and weaknesses and at least making as clear as I can what sequence of processes that it was that I went through in constructing my 'finding out'. In mundane terms the time table of my principal activities was as follows:

i) conducting a literature review, including a study of possible research designs and appropriate methods (1995-2004);
ii) performing a review of hospitals and imaging departments in England and Wales 1997;
iii) devising an initial interview schedule (Interview Schedule 1) suited to a survey of a relatively large number of respondents across what I hoped to be many departments (1999-2000);
iv) piloting the interview schedule and concluding that it should be converted into a questionnaire format, followed up by interviews with selected respondents (June/July 2000);
v) consulting focus groups to aid in the questionnaire schedule design (June/ July 2001);

v) piloting the questionnaire (August 2001);

vi) revising the scope of fieldwork to encompass only three departments, chosen on the basis of categorising them in terms of official data;

vii) selecting participating departments and respondents;

viii) administering the questionnaire;(January 2002-January 2003);

ix) reviewing questionnaire responses and selecting interviewees (January 2003-March 2003);

x) developing flexible interview schedules, undertaking and analysing interviews (Interview Schedule 2) (April 2003-December 2003); and

xii) final writing up (January 2004-April 2004)

Categorising Imaging Departments

The Department of Health and the Welsh Office provided information as to the number of radiographers, radiography managers, technicians, radiography tutors (diagnostic and therapeutic) student/trainees and helpers/assistants employed in each trust, along with the total employed per health authority. In order to locate a variety of settings in which radiographers' roles might be examined the *Directory of Hospitals and NHS Trusts* (1998) was consulted. This publication listed hospitals by their type, location and trust. It was possible to identify, for example specialist, community and acute hospitals. While an index of consultants categorised by their medical specialty was included, greater detail regarding the nature of the patient types referred was needed. The *Directory* did enable a 'short list' of potential departments for study to be collected and *The Institute of Health Service Management Health and Social Services Yearbook* (Institute of Health Service Management, 1998) provided essential, additional information. Hospitals were listed with information regarding income/budget, year established, types of care available (e.g. care of the elderly, acute, etc.), number of beds and type (e.g. acute, maternity, paediatrics, etc.) and whether out-patient and accident and emergency departments existed. The listing of consultants for each department provided an indication of the specialist care and treatment offered by each which would also influence the range of imaging examinations which might be undertaken.

The Department of Health was able to provide details of ordinary and day case admissions presented in the form of finished consultant episodes (FCE). An FCE is an episode where a patient has completed a period of care and is either transferred to another consultant or is discharged (NHS Executive, 1997). The Welsh Office provided Hospital Bed Use Statistics which provided aggregate data on patient throughput and bed utilisation. It listed the: specialties available at each site; average daily available beds; average daily occupied beds; discharges and death; percentage occupancy; average duration of stay; and bed use factor and day cases. From both sources it was possible to determine the number of patients admitted to specialist departments in each hospital or trust. While this provided an indication of patient type and volume of examinations which might be referred to each imaging department, the statistics were not complete and contained inconsistencies, being presented either for a trust or a hospital and did not take account of out patient appointments.

After considerable persistence it was possible to obtain data from the Department of Health and the Welsh Office regarding the examinations performed in the trusts in England and hospitals in Wales. The Government Statistical Office of the Department of Health (1997a) provided the total number of imaging and radio-diagnostic examinations or tests, plus numbers per modality undertaken in each English trust. The modalities reported were computed tomography, magnetic resonance imaging, obstetric ultrasound, non-obstetric ultrasound, radioisotopes and radiography, with and without fluoroscopy. These were further defined as those undertaken by the imaging department and those undertaken by any other department. The imaging examinations undertaken by departments other than general radiography were primarily ultrasound, radioisotopes and fluoroscopy. Each trust was assigned a number and a table produced which compared 234 of them, illustrating the imaging examinations undertaken with the number of whole time equivalent (wte) radiographers employed. From this information a further table was produced which listed trusts in order of number of examinations performed, including the assigned number of the trust, the name of the trust, wte radiographers and total number of examinations. By comparing the two tables with the information obtained previously regarding bed use and specialities, plus location and type of hospital within each trust, it was possible to select departments which would provide

the variation in settings required for study. I intended to use this information as the basis for selecting an English sample of institutions to set against their Welsh counterparts at the early stage of my planning, when a large scale survey appeared to be my best design option.

The Welsh Office was unable to provide comparable statistics to those produced for England by the Department of Health, providing lists only of the total number of requests for each imaging department and categorised them according to the Korner Schedule. Korner coding was originally established to estimate the total costs of staff, materials and equipment required in a given examination. Examinations are grouped with complexity increasing from groups A to F. Complex examinations requiring more resources and higher skills or knowledge levels from some of the staff are given a higher coding than basic, routine straightforward procedures. Korner statistics take into account the age and disabilities of patients which influence examination time and the radiographic expertise required to produce a satisfactory outcome. Uncooperative patients, supplementary (additional to normal routine) examinations, plus those undertaken on the ward or in theatre all attract additional coding. The information obtained was not as detailed as that available for England but did provide information for each department. The statistics only allowed generalisation to be made as to the type of examinations undertaken. And with some departments' figures missing from the report it was not possible to determine the number of types of examinations undertaken in each department with complete confidence.

In the light of the above information it was decided to categorise departments into three major types of settings:

Category 1:

- Largest hospitals/departments
- 1000 + beds
- Number of radiographers on site 50+
- Examinations per year 150,000-350,000
- Wide range of examinations

Category 2:

- Medium Sized Hospitals
- 500 - 1000 beds
- Examinations per year 50,000 – 149,999
- Radiographers employed 30 – 49
- Mixture of plain and specialised imaging examinations

Category 3:

- Smaller hospitals / departments
- Less than 500 beds
- Examinations per year less than 50, 000
- Radiographers employed less than 30
- Specialist and/or limited range of radiography-mainly plain radiography

Sampling Strategies

In order to gain a sufficiently comprehensive picture of radiographers' roles it was thought to be necessary to collect data from managers and radiographers of different grades. Radiographer grades might be expected to reflect variation in tasks undertaken and responsibilities within a department. The environment of departments, the number of radiography, radiology and support staff employed and the number and type of examinations undertaken would also be expected to influence both. Choice of sample had, therefore, to be initially on an imaging department basis, chosen to represent crucial types of service specialisation/generality.

Choosing sites, gaining entry

Choosing sites on the basis of this simple typology would enable some comparison to be made between radiographers employed in different settings. It was anticipated that number of staff and number and range of examinations undertake would influence degrees of specialisation, role development and skill mix occurring. The number of radiologists employed and whether a department was situated in a teaching hospital might be expected to influence available opportunities

in these respects and the autonomy of radiographers. When selecting the departments to be used in the study the number of radiography assistants/helpers was also considered. As some trusts employed radiography assistants/helpers on a technical salary scale they were recorded in the Department of Health and Welsh Office statistics as technicians. It was also felt useful, given my study objectives, that the departments selected should be involved in some way with the clinical education of students. Using the information gained from the Welsh Office, Department of Health and the Government Statistical Office, the matrix outlined above was developed, enabling departments to be categorised according to theoretically relevant criteria.

Developing research instruments

In the first version of the interview schedule (see Appendix One), the first seven questions were related to respondents' personal details including name, place of work, employment status (full or part time), number of contracted hours per week, years spent in present employment, details of previous posts held and, if relevant, career breaks. It was anticipated that such information would help in revealing whether and how variations in experience, qualifications and contracted hours were related to respondents' roles. Some departments have, in the past, restricted part time positions to the radiographer grade, limiting the range of examinations, responsibilities and scope of practice undertaken by those employed part time. Experience, in terms of present and previous posts, years practised and qualifications were expected to bear direct relationships to respondents' career progression and responsibilities held. Similarly, it was anticipated that number of years practised since qualification, number of years in present post and patterns of previous posts would help to build up profiles of how departmental settings and organisation influenced respondents' roles. Question 8 required interviewees to tell me about their jobs. Questions 9-12 focussed on the rooms/areas in which informants worked. I hoped that this would provide detail of daily tasks undertaken and determine how varied radiographers roles were. It would also help establish if their scope of practice was limited to specific areas, even where more specialised work was undertaken. In practice a prompt was usually required, so that

interviewees were shown a list of rooms or areas and asked in which most time was spent working and to add any areas not included. They were also asked to indicate how much time was spent on average per year in each of the areas and in which most time was spent in order to allow profiles of patterns of work to be drawn up. The question 'Would you say your job is different to that of other radiographers of the same grade?' (Question 13) was designed to determine whether respondents perceived their role to vary from that of others and in what ways. It was anticipated, for example, that in the imaging department of a large teaching hospital, roles would be different to those in a small general hospital, both because of the range of services offered and the organisation and degree of autonomy of the department, determined by the number and presence of radiographer and radiologist supervisory staff. This question would also serve to determine if interviewees had additional responsibilities, such as serving on committees, or obligations for continuing professional development responsibilities. Questions 14 and 15 were related to responsibility, accountability and its influences, such as how they changed when working 'out of hours' in order to probe the extent of autonomy held by respondents. It was hoped to determine whether they were closely supervised and to what extent their work regime was organised for them. Questions 16 to 20 related to activities and skills rather than roles in order to identify the clinical proficiencies that radiographers required. Informants were asked how their jobs changed when working in different rooms or areas, what different skills were needed and how these differed from others in the department, in order to determine the scope of practice,

It was anticipated that working practices would be influenced by changes in environment and the nature of patients being examined, so that interviewees were to be asked how their role changed when working out of hours, that is, 'on call' and at weekends. It was felt that their roles would differ when working single handed or as part of a small team, particularly without support staff or the backing of radiologists. In order to further gauge the nature of radiographers' roles it was decided to determine which three activities took up most and least of interviewees' time and which of these they considered to be most and least important.

Question 20 asked what different skills were needed when undertaking tasks in various rooms and areas. It was felt that skills required when working, for example in theatre would be very different to those when working in an ultrasound room. As, for many years, there have been discussions by radiographers' professional and government bodies regarding shortages of radiographers and radiologists and the need to introduce practitioners who could undertake some of their roles, interviewees were asked to define descriptors of radiographers' roles (Question 21), such as professionalism, working as a team member, being autonomous and questioning accepted practice and research skills and how important they felt each one to be. As indicated in Chapter Three, at the time that this field work was being devised, promoting skill mix was central to government policy and was being discussed generally. There was a possibility of a 'new breed' of staff emerging who would be trained to undertake only plain radiography. In order to determine their opinions of such potential changes in the roles of those delivering radiography services, interviewees were asked what aspects of their role *could* and *should* be performed by someone else (Question 22). Prompts asked who should be doing these tasks, why they felt it necessary and, if this was not happening, why not. Interviewees were also asked if they felt able to perform activities undertaken by someone else, the designation of those identified and if they did not, why not, while Question 23 asked what skills or activities informants felt currently undertaken by someone else they could perform. Informants were asked to identify role development activities currently undertaken (Question 24) and what was influencing their own role development in order to determine their extent and relevance. In order to gauge support for role development informants were to be asked how they anticipated that their roles would change in the future. Radiography education was explored in Questions 26-30 to determine if informants considered current arrangements to be sufficient to produce graduates with appropriate skills for the future.

Piloting the initial interview schedule

This first interview schedule was piloted during May to August 2000 using a lecturer in radiography with an educational and recent clinical role, a clinically based lecturer and two practising radiographers from departments not involved in the

study. The informants with an education background were chosen as it was anticipated their research and teaching expertise would enable them to provide valuable feedback on the design and content of the schedule. Similarly it was felt that practising radiographers were most likely to represent informants to be sought for the main study. Interviews took place at informants' place of work, except for one practising radiographer who considered it more convenient to be interviewed at her home. The pilot revealed serious faults in initial design and structure. I had decided that it would have a predominately focussed character, with some open items and be delivered and completed face to face with individual respondents. Driven by the need to obtain sufficient facts to provide a profile of them in context, the extensive range of questions generated resulted in lengthy, superficial interviews with little exploration of pertinent points. It was felt that questions relating to grade, place of work, years qualified, existing qualifications, qualifications being undertaken, current roles and responsibilities, among others, could have been better collected via a conventional questionnaire. Respondents appeared to find some questions too difficult to answer, for example as to what professionalism meant to them and, therefore, found the interview process difficult. They experienced similar difficulty when asked to rate skills relating to professionalism. There appeared to be a significant amount of guesswork, that is, responses that afforded little thought but reflected feelings that respondents felt they had to make as judgements when put under pressure. Interviewees responses relating to skills required in different areas were repetitive and lacking in depth. It was, therefore, decided to transform most of the context of this initial interview schedule into a questionnaire which would elicit the information required and identify radiographers who could then be interviewed from whom to gain further, detailed material which would be used to build more comprehensive and nuanced accounts of their roles and the factors influencing them and what might be appropriately read from their responses as to the education of undergraduate students.

Focus groups

The questions that I finally put to respondents were derived from the literature, my knowledge and experience of diagnostic radiography, informal discussions with radiographers, clinical lecturers and radiography business

managers, three focus groups and those used in the initial interview schedule. The focus groups formed a small but important formative part of the research process of which an outline is included here. Of the three focus groups undertaken, one was made up of clinical lecturers, that is, radiographers employed by the local radiography education department in clinical areas to instruct students while maintaining their own clinical input. They were contacted via e mail to ask if they would participate. Of the seven who were approached five agreed to do so, each having more than five years clinical experience. The second and third groups comprised clinical radiographers of different grades employed full and part time in departments which undertook a range of imaging procedures. Focus Group One met in the education department to which they were affiliated in June 2001 on a Wednesday afternoon when students were absent from their departments. Focus Groups Two and Three were a mix of managers and clinical staff selected by the managers of two departments that I approached for this purpose. The departments were selected as undertaking a wide range of imaging examinations, as well as supplying the radiographic workforce for one other smaller department. Managers were initially contacted by telephone and arrangements made for meetings in their own departments at a convenient date and time during June 2001. The groups were set a time limit of one and a half hours and, in practice, took on average of one. Focus Group Two comprised six clinical radiographers and two managers and Focus Group Three comprised five clinical radiographers and one manager. Experience ranged from two to thirty years.

The purpose of the study was explained to each focus group. It was stressed that without an up to date account of what constituted radiographers' roles now and in the future, undergraduate programmes might not be producing new entrants with the skills and competencies required by service. Each group was asked to conclude their discussion within one and a half hours on the question of 'What activities comprised radiographers' roles?' Each was asked to appoint a scribe who recorded discussion outcomes on a flip chart and to maintain their group's focus on the task. Little intervention was required except to assist the facilitator to keep the group focussed when the discussion, particularly in Group One, centred on specific individuals. Group One was asked to clarify what was meant by 'role development'

when it was recorded as an identifiable activity. I documented the discussions of each group by making hand written notes as it was felt a tape recording would inhibit their flow. The outcomes of the three groups were combined and the record used to form a list of activities that they claimed characterised radiographers' roles, as well as a set of issues that they saw as problematic in pre-service education and practice (Appendix Two). These were used both in framing interview schedules and when designing questionnaires, providing a reality check and update on much of the literature and a ruler on the authenticity of my own perceptions.

Designing the questionnaires

It was decided that what was still rather lengthy questionnaire needed to be as user friendly as possible in terms of its vocabulary and grammar, using the pilot interviews to gauge these matters and adapt as necessary. Care was taken to use language that would be familiar to all respondents, regardless of their age, experience or context in which they worked. In addition, every attempt was made to ensure that questions were unambiguous and unequivocal, avoiding abbreviations, leading questions and bias. Where the interview schedule had been designed with prompts to elicit answers to specific questions, several separate direct items had to be included in the questionnaire in order to extract the information required. Pilot questionnaires used for radiographers and managers may be found in Appendix Three.

It was recognised that respondents would have recall limitations, especially when considering events that may have had happened several years ago. However it was still felt appropriate to ask questions eliciting opinions of their own radiography education and their initial preparedness for their roles. On the other hand, when considering the in-service courses attended by respondents it was decided to limit questioning to the last two years to minimise response-avoid areas. It was also felt that training within the last two years would be the more relevant, given the changing nature of radiography practice. The questionnaire was clearly divided into items relating to radiography in general and questions relating to respondents' particular roles.

As is normal practice with any questionnaire or interview design, when asking opinions of a range of statements, care was taken to avoid double negatives. The schedule incorporated closed and open-ended questions with response choices being used. A ratings format was also used to gain opinions. A four-point response scale was used as this was considered to be quick and easy for respondents. It was hoped that this design would ensure respondents would find questions clear, easy and quick to answer. While a 'don't know' response was avoided, wherever possible, it was incorporated into some questions to distinguish forgetfulness from belief. An odd number of steps allows respondents to express a middling or neutral strength of opinion. This can be problem with some respondents who refuse to express an opinion and tend to select the middle category for all questions. However, if respondents are not provided with a 'no or neutral opinion' option they may be forced to randomly choose a negative or positive response. A slightly amended version of the questionnaire was compiled for managers not undertaking clinical radiography, where the main differences related to questions to determine the amount of time they spent in clinical areas and descriptors that they felt appropriate to their role, such as budget holder, human resource manager, administrator, statistician.

A pilot study using four clinical radiographers and two managers drawn from departments not involved in the study found that respondents considered an initial version of the questionnaire lengthy but unable to suggest generic areas which should be omitted. Most reported that it could be completed in 15 minutes. As a result of these suggestions some activities were added and others that respondents stated were obviously undertaken by all radiographers were omitted from the final version. It was confirmed that a different questionnaire would be needed for radiography managers who had little clinical practice. Respondents were asked to complete a brief feedback sheet with informal feedback also obtained via conversations with the volunteers. Feedback from the pilot questionnaire study can be found in Appendix Three

Following the pilot study, related questions were grouped more succinctly and the questionnaire divided into four distinct sections to facilitate completion. It

was felt that respondents would find it most difficult to recall dates relating to previous career history, qualifications and training. These questions, while not particularly probing, were considered difficult to answer and, hence, were put at the end of the questionnaire (Section D). Positioned at the beginning, of the questionnaire it was felt that they might have resulted in respondents postponing completion and, potentially, ultimately forgetting to do so. The final questionnaires for self completion by radiographers and managers aimed to: assess the nature and extent of their role and their levels of satisfaction with radiography graduates and radiography education; establish their opinions on the future of radiography; and determine factors influencing their career aspirations. It consisted of fifty-three items in total, its four sections focussing on personal roles and responsibilities; the professional role of the radiographer in general; radiography education; and respondents' personal background. Copies of the questionnaire schedules can be found in Appendix Four.

In Section A questions concerned the nature of the work, how much time was spent in each of these areas and the nature of 'role development' activities undertaken. Participation in on call activities and the total number of hours worked provided additional information. By establishing the frequency of certain activities it was hoped to assess the importance of tasks which would not only help to build a comprehensive picture of current roles but also influence the emphases to be placed appropriately on these tasks in the radiography curriculum. Respondents were questioned regarding their responsibilities and accountability so as to determine the extent of their autonomy and degree of supervision of other staff, in addition to determining extra responsibilities outside the normal scope of radiographic duties such as manual handling co-ordination, committee membership, and the like. Asking respondents about the main attributes that they considered they needed in their job was designed to give an indication of the personal skills they valued. The influence of skill mix on radiographers' roles was to be determined by questions relating to activities that respondents felt could be performed by another member of the healthcare team and those that they felt they could do with appropriate training. Questions regarding the appropriateness of radiography education to the nature of respondents' roles and their opinions of their own competency levels upon

qualification were also included in this section. By these means it was anticipated that this first section would contribute to the achievement of a profile of the respondent.

Section B contained questions relating to the professional roles of radiographers, plus the influence of other members of the healthcare team. Issues of accountability, responsibility and items related to skill mix and role development were included. This section was designed so as to enable a picture to evolve of radiographers' autonomy, extended practice and activities being undertaken which historically had not been considered within their remit. It was hoped that their opinions of the current and future scope of practice and affective behaviour could all be used to influence future radiography education.

Section C related specifically to radiography education. Respondents' opinions were sought concerning the suitability of their own radiography education, content of current courses and competencies of those presently qualifying. Respondents' opinions of the ability of radiographers to participate in postgraduate courses were elicited, with evidence of their own involvement.

Section D related to personal background and asked questions relating to grade, present and previous posts, qualifications, education and training. Using this information in relation to that obtained in other sections of the questionnaire would, it was anticipated, enable a profile of respondents to be built up, showing the influence of qualifications on activities and responsibilities. It would also be useful when determining which respondents it would be interesting and profitable to pursue as subjects for interview. Respondents were finally asked to complete name and contact details if they were willing to be interviewed subsequently.

Although happy with its purpose and clarity, I had considerable misgivings about the length of the final version of the questionnaire and its possible implication for respondents' motivation and stamina. Feedback from pilot respondents that completion took only about 15 minutes was the determining consideration in administering it in its final form.

The interview schedule

The final interview schedule was flexibly designed to probe respondents' opinions on specific areas and to explore issues less than evident from questionnaire responses. The areas identified generally related to radiographers' roles and the type and amount of factors influencing 'role development', current and future skills, opinions as to the clinical abilities of graduates, the appropriateness of undergraduate radiography curriculum and respondents opinions of their own and current radiography education and its students. Each interview schedule was different by design and enabled issues arising during the discourse to be probed and explored in greater depth. An indication of its character is given in Appendix Seven.

Scaling down: settling for three sites

It now had to be finally decided what scale of sampling should be undertaken. The burden of my own workload and my growing preference for gathering well-contexted information in some depth led me to finally abandon the lure of large numbers. I determined to look for one, easily accessible exemplar of each the three categories in the simple typology that gave shape to the English and Welsh official data. It would have been extremely interesting to have been able to contrast sites in England and Wales. It might have been even more interesting to compare those where early implementation of *Agenda for Change* was taking place with where it was still mere prospect. There can be no doubt that many sites would have been better than few. But the number that I could have contemplated managing would hardly have given me the basis upon which to establish findings of conventional statistical validity and reliability. I was more confident about managing fieldwork in exemplar sites regarded as cases. This seemed to offer the prospect of improving upon some of the obvious lacunae in the literature, particularly its tendency to show whether something happened or was done, or not, without detail as to distribution, incidence or frequency or to settle for measuring the relative effectiveness of radiographer/radiologist performance.

Once potential departments had been identified their managers were contacted by telephone or in person to determine if their inclusion in the study would be possible. A preliminary discussion took place by phone, to confirm whether they fitted a relevant category. Subsequently, meetings were arranged to further inform managers of my purposes and to answer any questions that they wished to raise. At the time ethical approval was not required as no patients were to be included in the study. Meetings with managers aimed to confirm that the nature of the work undertaken and the organisation and skill mix of staff was appropriate to one of the categories which I aimed to subserve. Final choices were made in the light of relative convenience of location to my places of work and residence. My decision to seek only one example in each category of department signalled my shift in belief, as a full-time employed, part-time student, in the necessity of a small and manageable number of thoroughly explored case studies, rather than a large scale survey format. It made me much happier as to the prospect of doing useful work. Descriptions of the three departments selected, referred to simply as A, B and C, now follow.

Department A (Category 1)

This department satisfied nearly all of the criteria required for Category 1, set in a 900-bed teaching hospital with 62 whole time equivalent radiographic staff. A wide range of imaging procedures was undertaken, ranging from basic radiographic examinations using conventional (ordinary x-ray) film to state of the art digital imaging. The number of imaging examinations undertaken per year was approximately 230,000. In addition to the large number of in-patients the presence of an accident and emergency unit required the provision of a radiography service 24 hours a day. The department had smaller, self contained units within it and the accident and emergency imaging unit was the first of its kind to be totally digital in the U.K. The department provided MRI, computed tomography and ultrasound, as well as cardiology, orthopaedic and urology services. A specialist cardiology unit and an accident and emergency unit were located in separate parts of the hospital. Radiography staff from a recently closed hospital had been transferred to the

department which had resulted in a re-organisation of roles. The department was used as a training centre for radiologists and had close links with a local medical school. The department employed three nurses and twelve radiography helpers. The grades of radiographers employed ranged from radiographer to district superintendent (manager). Students regularly attended this department for clinical education.

Department B (Category 3)

The Department was located in a specialist cancer treatment centre offering in- and out-patient facilities for those under the care of the hospital. It employed 10 whole time equivalent staff and two radiography helpers. Two consultant radiologists but no nursing staff were employed. The hospital had 84 beds and performed approximately 16,000 examinations per year. The grades of radiographers employed ranged from Senior 2 to Superintendent 2. As a small department in a specialised setting, while a CT service was provided, it was limited to patients under the care of the hospital. The department offered a mammography and ultrasound service and an out of hours service for in-patients was provided. Two radiography helpers were employed whose role was mainly concerned with the operation of the department's patient administration system, although patient care duties were also required of them. Students attended this department for clinical education.

Department C (Category 2)

With a population base of approximately 180,000, this department was opened in 1999 and had 503 in-patient beds. Accident & Emergency, orthopaedic, medical and surgical facilities were offered at the hospital, as well as intensive care, coronary care and a special care baby unit. The radiology department was equipped with a full range of state of the art imaging modalities and was the first to incorporate accident and emergency, general and specialist imaging examinations in the country to be totally digital. A computerised radiography/ picture archive system stored all images to the digital archive. Images were then viewed in many locations across the

trust. Approximately 100,000 examinations were undertaken per year in most of the Korner coding categories. There were twenty-three whole time equivalent radiographers and seven consultant radiologists, as well as a specialist registrar. Services included accident and emergency, magnetic resonance imaging and computerised tomography and ultrasound. The grades of radiographers employed varied from radiographer to Superintendent 2 and five radiography assistants/helpers were employed. Students regularly attended this department for clinical education.

Selecting Informants, distributing and analysing questionnaires

At initial meetings the managers of Departments B and C were able to supply information on the number of staff employed, their designation and the extent of 'role development' activities being performed. The manager of Department A emailed this information to me some five days after the preliminary meeting. These managers were also asked to nominate a radiographer who might be able to help with the distribution and collection of questionnaires. All managers were known to me and were assured that all information gained would remain anonymous. Pseudonyms would be used throughout in the presentation of data. If personal issues were divulged these would be omitted from the data presented. All tape recordings would be destroyed as soon as they had been transcribed. Managers were informed that they could withdraw permission for their department to be used at any time. Similarly, individuals could refuse to participate. It was made clear that disruption to the department would be minimised. On this basis, final decisions as to those to be included in the study were made. The purposive sample included the full range of grades, specialties, experience, full and part time staff. Respondents worked in different areas and grades and every attempt was made to obtain not only a mix of full and part time staff but the full range of specialties and experience levels using managers' recall of the areas where they worked and their specialist skills, if any. It was anticipated that response rates might be poor, given that radiographers were working under extreme pressure as a result of national shortage. It was agreed that a letter outlining the study would be placed on departmental notice boards to inform staff of the study and to stress the importance of their contributions and co-

operation. The Superintendent 3 grades in Department B and C were to receive the management questionnaire since they did not undertake clinical radiography routinely, while in Department A the Superintendent 3 grades were all clinical radiographers. Questionnaires were individually addressed to potential respondents along with a covering letter which explained the purpose of the study and stating why they had been chosen to participate and giving information regarding the return of questionnaires. They were asked to return them in an envelope provided either to the nominated person or in a labelled box in the departmental staff room. The envelopes were addressed to myself to ensure their return should respondents did not want to use either suggested route.

Questionnaires were sent to 46 individuals in Department A in January 2002. Despite a reminder, only 11 had been returned some 3 months later. It was felt that severe shortage of staff combined with disruption cased by merger with another imaging department had contributed to this poor response rate. Subsequently questionnaires were resent to all staff. In total a further eleven responses were received, comprising five radiographer, six Senior 2, seven Senior 1 and four Superintendent 3 grades, a total of 22, plus the Manager. Despite reminders no further responses were received. When the questionnaire was distributed in Department B in May 2002 only 8 clinical radiographers were in post and all were sent copies. Six were returned, plus one each from Superintendent 3 and Superintendent 2 grades. In Department C the manager of the department and the radiographer who was to act as the contact felt that a better return rate would be achieved if the contact radiographer distributed and collected. Due to staff holidays and attendance at conferences, copies were issued in July 2002 to 20 staff. There were returns from five in radiographer, two Senior 2, three Senior 1, two Superintendent 3 and one Superintendent 2 grade, a total of 13. The overall total of respondents across all three departments was 44.

Due to the relatively small sample size and the nature of the study the questionnaires were analysed manually using simple counts within a qualitative approach. Further statistical analysis of responses was not deemed appropriate, given sample and cell numbers. The range of responses to each question was

recorded and common themes identified. If applicable, responses were grouped by site or grade of respondent. These responses are available in Appendix Six and analysed in the next chapter.

Arranging, conducting and analysing interviews

A short list of respondents who had indicated at the end of their completed questionnaires that they were willing to be interviewed was made. A decision was taken to interview all managers since it was felt they would have particular insight into current and potential factors influencing the practices of radiographers in their departments. In view of their responsibilities as 'employers' it was also considered they would be equipped to comment on the suitability of graduates and the undergraduate curriculum. The exceptions were the Superintendent 2 of Department A who did not return the questionnaire but was willing to be interviewed and a Superintendent 3 of Department C who was unavailable for interview.

Of the 27 radiographers who indicated on their completed questionnaires that they would be willing to participate further an attempt was again made to select a range of respondents representing various grades and areas. In addition respondents were also selected where they had provided a questionnaire response which required or seemed to merit further investigation. In total 20 interviews were conducted, 10 in Department A, Four in Department B and 6 in Department C between April 2003 and December 2003 with the following personnel:

Department A

- Manager
- Superintendent Two with management responsibilities
- Graduate with six months experience. (radiographer grade)
- Senior 2 radiographer who worked exclusively in the chest imaging room, qualified in ultrasound, yet not using these specialist skills
- Senior 2 radiographer employed part-time with specialist mammography skills
- Senior 1 radiographer in charge of the A & E Department

- Senior 1 radiographer who performed and reported ultrasound single handed, as well as undertaking general radiography in a hospital for geriatric patients
- Superintendent 3 radiographer in charge of four fluoroscopy rooms; undertaking barium enemas with a responsibility for training radiologists
- Superintendent 3 who worked exclusively in IT
- Superintendent 3 who worked exclusively in the nuclear medicine department

Two senior 2 radiographers and one radiographer grade who had previously expressed a willingness to be interviewed were unable to keep appointments and declined to participate further.

Department B

- Manager
- Superintendent 3 Radiographer
- Senior 1 radiographer with responsibilities for CPD
- Senior 2 radiographer responsible for the ordering ad control of pharmaceuticals in the imaging department

A further senior 2 radiographers were unable to attend several appointments through illness.

Department C

- Manager
- Superintendent 3
- Senior 1 Radiographer in MRI
- Senior 1 radiographer with responsibility for students' clinical education 50% of his time
- Senior 2 in general radiography with an interest in A & E reporting
- Senior 2 radiographer, a graduate with three years experience with injecting skills

Following selection of informants for interview appointments were made by contacting each directly by telephone or face to face in their respective departments. My contact in each department helped me to gain access to interviewees by locating them and on occasions confirming interview dates and times. The process proved difficult because of staff shortages, changes in shifts and illness. Given these, the biggest hurdle to overcome was getting permission for interviewees to leave their department so that we could focus on our conversation. Managers did not find the process easy to accommodate so that I found myself, for example, undertaking the interview with the Manager of Department A at 7.30. a.m. on Christmas Eve. During interview visits it was possible to meet informally with staff in staff rooms and in general processing areas and witness how they conducted their daily activities. Staff in Department A found it particularly difficult to leave their place of work and several interviews had to be postponed. It took eight days to conduct interviews there and four in Department B, while Department C interviews took a total of six days. A room was made available for all interviews although there were some disturbances. All interviews were tape recorded and transcribed verbatim. Equipment failure caused a problem when interviewing the Superintendent 3 of Department B but fortunately he was able to solve the problem.

The questions asked of informants varied. Unclear questionnaire responses and response points requiring further expansion were prioritised. Themes at interview focussed mainly on informants' roles and tasks, the four tier structure, assistant practitioners, radiography education, performance of graduates specialisation and role development. All respondents were asked to describe the nature of their roles and factors which they regarded as influencing them. In all cases informants were asked to expand on their views and experience of radiography helpers and assistant practitioners and what they felt their place might be in an imaging department. There had been some contradiction in questionnaire responses where there was support for radiographers' 'role development' and recognition of the fact that, if this were to occur, aspects of their work would have to be undertaken by other suitably qualified members of staff. Yet there was opposition to the introduction or expansion of the work of helpers and assistant practitioners.

As there had been criticism, particularly from Department B, of the preparedness of radiography graduates for their work, it was decided to explore this further at interview to determine what skills were lacking and what changes, if any, should be made to the undergraduate curriculum. It was also decided to investigate further the reasons why opportunities to specialise differed so markedly between departments.

Each interview was undertaken somewhat differently, given the logic of further exploring written responses. While common themes, as indicated above, were explored, other areas were also pursued as a result of specific elements in previous responses. Informants were allowed to expand on their conversation and explore unanticipated areas. Chapter Six will develop these themes and discuss them in the light of the current literature. Each interview was tape recorded and subsequently personally transcribed verbatim. The completed transcriptions were then manually analysed and specific themes grouped to identify similarities and differences in responses between informants and departments. Transcriptions were stored on a computer disc and files created which grouped identified themes for each department, with further merging of data to group themes for all departments. For example, it was apparent that factors influencing 'role development' were issues for all departments. The segment of the transcriptions where this was discussed, as well as others, were grouped and comparisons made between departments and interviewees, where appropriate.

This method of analysing data has been referred to as 'cut and paste', as described by Coffey and Atkinson (1996). Transcripts were broken down into text segments and allocated to themes. In contrast to grounded theory and holistic and interpretative approaches, as described by Gordon and Langmaid (1988), cut and paste involves the allocation of codes to segments of text, which Coffey and Atkinson described as a subtle process of having ideas and using concepts about data. Relevant data was isolated in the form of text segments from the interviews and consequently collated and interpreted into themes for discussion.

Summary of and reflection upon methodology

My methodological progress constituted a particularly complex odyssey as I moved from a rather unreflexive commitment to the necessity of survey work and closely defined job analyses toward the virtues of qualitative, more context-sensitive study, as I have tried to give an account of in preceding sections. This trajectory, at least in part, represented a laborious research apprenticeship, squeezed into a busy professional round. At several points it violated the desirable sequence of research procedure where a problem is thought through in the light of clearly adumbrated theory and consequent methodological and analytic choices made. For example, my choice of sites for data gathering was made more on the basis of a professional 'feel' for problems that suggested that life in the variety of large/small, generalist/specialist departments that may be characterised from official data was likely to be 'different' than on a basis of prior commitment to particular organisational or management theories. I subsequently discovered that there was long standing work, for example in education (Moeller, 1964; Davies, 1973), nursing (Thomas, 2003) and physiotherapy (Mercer, 1978) that suggested that both scale and technology, in the sense of how the work is done, ramify with issues of autonomy and control, as in the classic work of Perrow (1993) and studies, such as Burns and Stalker (1961) and Woodward (1965) that, in more or less general ways, could have theoretically illumined my choice. I will also allude in a general way to them in my discussion of findings but I should make clear that I did not know of them at the point of institutional sampling.

The other feature of this account that seems to merit further attention is the emic nature of my perspective. I was an education 'insider', with an established professional history, well known to most of my informants. That this 'mattered' was undoubtedly the case in a complex number of ways. It facilitated my entry to departments and greatly reduced start-up and arrangement making problems. Individuals made their own unpressured decisions about participating. My own judgment would be that when they did, it was with trust and ease. Most personnel were genuinely concerned about issues of current and prospective changes in their roles and relations and willing to share their views on such matters. Most, too, had

strong, though widely differing, views about radiographers' education. For many, this was not enough to induce them to find time in their busy schedule to participate and it cannot be estimated how their contributions might have altered the balance of evidence collected. At the same time, my 'insiderness' was an object of constant vigilance for me during the course of collecting information, as well as handling and interpreting it. The virtues of the research 'stranger' (Delamont and Atkinson, 1995) have been well rehearsed and may, more than is usually conceded, constitute making the best use of necessity. Being an 'insider' enabled one to gloss and comprehend issues in depth. Done in a blinkered way, these processes would be fatally flawed; eyes wide open they could, I would claim, be a great strength in conducting and analysing empirical work,

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Part Three

Chapter Five

Questionnaire responses

Profile of Respondents

A total of 38 clinical radiographers and six managers responded to the questionnaires.(Question. D3). Tabulated responses can be found in Appendix Six. The 22 respondents of Department A represented 39% of its workforce, in Department B the six represented 60%, while in Department C the 10 respondents represented 43%. While Department B respondents could be considered representative, lower response from Departments A and C made them less so. As the questionnaires were to be used to identify informants who would be invited to be interviewed in order to gain a general picture of the work undertaken, these response rates were, at the same time, not considered an insurmountable problem.

The majority (92%) of respondents were employed on permanent contracts; 79% were full time, 68% contracted for 35 hours per week (Q. D4, D5 & D6). Most had worked in a total of two imaging departments and had held, on average, three posts (Q. D11 & Q. D12). Their experience ranged from less than a year (radiographer grade, Departments A and C) to 36 years (radiographer grade, Department A) (Q. D11). The latter, employed for most of this time on a part time basis in general radiography, had been thereby prevented from applying for promotion. Radiographers were generally not rewarded for general radiography skills and needed to specialise to move up the career ladder. In Department B all respondents had been qualified more than eight years, which reflected their superintendents' decision to employ only experienced staff to deal with the special requirements of patients attending the department. The range of work undertaken by respondents in all departments was wide, as can be seen from tabulated responses to Questions A1 and A2 in Appendix Six and included radiographers who worked exclusively in certain areas, such as a chest imaging room, nuclear medicine department, Information Technology, magnetic resonance imaging, fluoroscopy,

accident and emergency, mammography and computed tomography. This profile of respondents provided data for the observations made in the following section.

General Observations

Most respondents (70%) were actively involved in general radiography and 60.5% in accident and emergency (A&E), the latter reflecting the fact that there was no A&E facility in Department B. The high percentage of staff involved would seem to confirm the need to privilege plain film radiography in the undergraduate curriculum. All respondents in Department C were involved in general and accident and emergency radiography, in Department A 13 (59%), while in Department B five of the six respondents undertook general radiography.

Nearly half of the respondents in Department A were working in a specialised area. The size of the department required an arrangement of specialist teams and a Superintendent 2 anticipated that it would take one radiographer over a year to *'rotate through all the rooms'*, thereby making it difficult for them to maintain requisite specialist skills. In Departments B and C the smaller number of rooms and the organisation of staff rotation enabled radiographers to gain experience in both general and specialised areas, although a core team managed specialist areas, such as MRI, CT and nuclear medicine. Mobile radiography was performed by 50% (19) of respondents, with the highest activity in Department C (70%) (7). Only 2 of the 6 respondents in Department B performed mobile radiography since the hospital did not deal with acute cases requiring imaging on the ward. (Q. A2)

Three of the five respondents who worked in nuclear medicine did so exclusively. These were based in Department A which afforded no rotation through this room. The Senior 2 in Department A worked in this area occasionally, supported by permanent staff when staffing levels permitted. There was no nuclear medicine imaging room in Department B. Eight respondents (four from Department B) were involved in interventional radiography (Q. A1), their frequency of involvement being higher than participation in the specialist areas of MRI, CT, ultrasound, RNI, cardiac catheterisation and DVI (Digital Vascular Imaging). As reflected in interview

responses (see Chapter Six), Department B afforded greater opportunity to participate in interventional work.

When compared with the other two departments, a high proportion of respondents in Department B performed mammography, interventional radiography, CT and MRI, all regarded as specialised areas. This represented 40% of the total clinical workforce of Department B there, indicating that the department offered greater opportunity for radiographers to engage in specialised procedures, again as subsequently explored during interviews. Most respondents, except in Department A, either rotated around these areas on a weekly basis or were specialised and remained in one (Q. A1b). Weekly rotations required versatility and enabled respondents to maintain a range of skills.

Responsibility and Accountability

Responsibility for other members of staff did not feature highly in any of the responses (Q. A3). Although more senior members of Department B and C had responsibilities for more staff than their junior colleagues there seemed to be little relationship between number of radiographers answerable to them and their grades, with some Senior 1 radiographers in Department A having none, while a colleague on a radiography grade had nine. In Department B the Senior 1 staff had others answerable to them, while a Superintendent 3 had none, since the grade had been awarded for specialist skills, not managerial responsibility. No ancillary or nursing staff were answerable to clinical radiographers, having their own line managers or senior members of staff. The inclusion of management in the radiography curriculum if its purpose is preparative rather than appreciative might well be questioned, given that radiographers appeared to be exercising such skills so fitfully. Half of the respondents in Department B and nearly half in Department A had between one and ten and the majority of respondents in Department C (80%) had between one and four radiography helpers accountable to them. The respondent in Department A who claimed to have ten answerable to him had only been qualified approximately eighteen months.

In response to Q. A4a, just over half of all respondents (53%) indicated they were directly accountable to a Superintendent 3, though the majority of those in Department B felt that they were answerable to their radiography services manager, confirmed by their Superintendent 3, who described the manager's role as the organisation and management of the department on a day to day basis. In turn, the manager explained how much she relied on the Superintendent 3 when other aspects of her work, such as committee meetings, resulted in her absence from the department. In Departments A and C most respondents considered themselves accountable to the Superintendent 3, although the fact that many made two choices as to accountability meant there was some confusion. The indecision surrounding who decided what respondents did on a daily basis indicated they were unclear as to some aspects of the organisation and management of their departments.

All respondents were involved in some form of out of hours cover, mostly from home and involving nights (Q. A5). These out of hours duties would require of them a wide range of patient examinations involving decision making and the ability to challenge inappropriate requests from requesting clinicians. The greatest amount of out of hours work took place in Department A, though the highest proportion of staff involved in it occurred in Department B, from home. The majority of respondents in Department B worked basic, contracted hours of 35 per week while, in the other two departments, shift work and on-call arrangements took figures up to 50 and over for seven respondents, with a superintendent three in Department A working 67 hours per week.

'Role Development' Activities

As indicated by responses to Q. A7, Intravenous injecting was the most common 'role development' activity, undertaken by 21 (38%) of respondents including all those in Department B. But only six reported on images, five of these in Department A. The numbers were insignificant compared to involvement in other reporting activities. Larger proportions, particularly in Department C, were involved in the 'red dotting' of images and, as we presaged, a higher proportion of radiographers in Department B were involved in counselling since the department

mainly dealt with terminally ill patients although as we shall see later, the numbers involved on a daily basis were not significantly more than the other two departments.

Respondents undertook a total of 20 'additional activities' (Q. A8). Except for the supervision and assessment of students, these were performed by more senior members of staff. Department A respondents covered the widest range of additional activities. The most unexpected of these were the Superintendent 3 radiographer (Department A) who was responsible for training radiologists to perform barium enemas, the Superintendent 3 (Department A) who was the PACS (picture archive and communication systems) and RadIS (radiology information systems) manager and the Senior 1 radiographer (Department B) who was responsible for medical and pharmacy supplies ordering.

Daily Activities

Responses to Question A9, 'How does your job differ?' produced a large range of responses and provided further information which enabled the identification of radiographers for interview. A radiographer in Department C performed CT scans and barium enemas, an unusual combination which also served to identify the flexible arrangements existing there. The most frequent daily activities performed (Q. A10) concerned: 'practical aspects of patient care'; cleaning of equipment, much of it electrical or needing to be handled by skilled operators rather than regular cleaners employed by the hospital, undertaken by all respondents on a daily basis, in order to prevent cross infection; administrative tasks; image manipulation; preparation of rooms and accessories; and independent decision making as to supplementary techniques to be undertaken. It was only in Department A that informants (four in total) reported not exercising independent decision making skills. The specialist nature of ultrasound and nuclear medicine work of three of these informants largely accounted for this response, since the nature of their roles and responsibilities negated the need to make decisions regarding supplementary techniques. Ultrasound imaging is a dynamic process with, normally, no specific protocol regarding the number and type of images to be taken to demonstrate relevant anatomy and pathology. Procedures are operator (radiographer) dependent or occasionally images are taken according to an agreed scheme of

work. Similarly, the radiographer working in nuclear medicine would not have been in a position to undertake supplementary techniques since a set protocol was usually followed with no scope to expand investigations further. The fourth informant was in a junior grade, only qualified six months and therefore considered too inexperienced to make decisions regarding supplementary techniques, relying on more senior and experienced staff for guidance. Observation activities (such as blood pressure or temperature taking) were performed the least, though several of those subsequently interviewed considered nursing activities should be included in the undergraduate curriculum. 'Non radiographic duties assisting the radiologist' and 'assisting in sterile procedures' were performed least in Department C where radiography helpers had been trained to undertake more than usually active supporting roles. The majority of respondents in Department C and half of those in Departments A and B were not involved in counselling on a daily basis. The latter was surprising since Department B dealt with terminally ill patients. Occasionally referring clinicians requested examinations which radiographers, considering patients' medical history, thought inappropriate. Only twelve respondents (31%) frequently made independent decisions to undertake different examinations to the ones requested by clinicians, while half of them sometimes did so, with comparable incidence across all three departments.

Respondents listed a total of forty-six attributes which they felt they needed in order to do their job (Q. A11). Patience was the most common quality, identified by 15 (38%) of respondents, followed by communication by 10 (26%). This was unexpected, given that communication is so widely regarded as being of importance in radiographer/patient episodes that one might have anticipated it coming first. Ability to deal with all types of patients and to adapt radiographic technique and versatility were mentioned by a total 10 (26%) of respondents Decision making skills and ability to think independently were each identified by only 2 (5%) of respondents, yet such attributes are held to be important to radiographers aspiring to expand into traditional radiologist led areas. A sense of humour was identified as being needed by 7 (18%), all from Department A. As this department was the largest and busiest its radiographers may have felt that humour helped to relieve the stress that their job entailed. Empathy was identified by 7 (18%) of respondents, with only

1 of those from Department B and none from Department C, while a caring nature and compassion were attributes regarded as necessary by 8 (21%). Since staff in Department B dealt primarily with terminally ill patients, it might have been expected that empathy would have featured more highly among the characteristics of individual professionals that they deemed desirable. Altogether, 15 (39%) of radiographers considered that empathetic skills were needed.

Regarding aspects of their own roles (Q.A12a), 17 (48%) of those who responded, with one exception in Department A, felt that no aspects of their role should be performed by someone else. Nine of these were from Department C. Activities identified as those capable of being performed by non-radiographers were administrative and supportive, for example, cleaning rooms, finding films, changing patients and room preparation. At the same time, most felt that they should be performing some aspects of others' roles, particularly reporting (24%) or other aspects of currently radiologist-led clinical examinations (Q. A12b). There was only one positive response to radiographers performing an activity currently undertaken by support staff (clerical duties) indicating that, generally, radiographers were firmly focussed on what they defined as 'advancing' their roles. Injecting was the most frequently cited activity which respondents were performing for which they had not been trained (Q.A13). In light of such responses, it was decided to investigate further at interview if there appeared to be a need to include injecting skills in the undergraduate curriculum. Only two respondents, both employed in Department A responded they were report writing, an activity for which they had not initially been trained.

More than half (58%) of respondents felt they had been trained for activities which they were not currently performing (Q.A14). Their range was wide but did not include specific imaging examinations, the highest response (n=7) relating to aspects of nursing which had historically been included in the curriculum, since originally nurses performed x-ray examinations, resulting in radiographers inheriting a legacy of nursing duties. Most imaging departments now employed nurses, suggesting a need to evaluate the continued inclusion of including nursing elements if they are intended to underpin practical outcomes. Conversely, if in future skill

mixing was to expand, nursing skills might well be required by radiographers in order for them to be in a position to cross traditional professional boundaries into currently nursing dominated areas. Four (67%) respondents in Department B felt that their pre-service training had been appropriate, again an unexpected finding since this department offered the greatest range of specialisation, for which their undergraduate education would have been unlikely to have offered direct preparation. Since experienced radiographers only were employed in this department it was anticipated that they would have considered their undergraduate education insufficient to prepare them for their current work. Only two respondents in Department A and one in department C felt that they had not been competent to practice upon qualification (Q. A6). They had qualified from different radiography education centres and were currently on radiographer, Senior 1 and Superintendent 3 grades. One was diploma trained, the other two degree qualified. Most respondents had some experience of specialised procedures upon qualification yet did not consider that they were competent to perform them, except for three who considered themselves able to undertake a CT of the head. These three had qualified from the same radiography education centre which included CT head clinical assessment as part of their award. When identifying competency in specialist procedures three radiographers unexpectedly identified theatre, barium meals and enemas and ERCP (endoscopic retrograde cholecystic pancreatography) as specialised, highlighting the contradiction existing between definitions of specialised and general radiography.

The majority of respondents considered that their clinical director, a radiologist, followed by the radiology directorate, decided departmental policies (Q. B1). The individual who organised the day to day running of the departments was considered by most to be a Superintendent 3 or Senior 1 (Q. B2), the strongest response coming from Department C where eight of the ten respondents considered that the former was responsible for organisation. One radiographer in Department A said that nurses ran the department. In response to Q. A15 all radiographers described themselves as professionals while 97% considered they were team members, with many claiming to question accepted practices (79%). The least

frequent descriptor recorded was 'researcher' by 10 (26%), not surprising since 29 (76%) had never undertaken research.

Helpers and Assistants Roles

We must remind ourselves here of the difference between radiography helpers and assistants (assistant practitioners). Helpers assisted radiographers in the general running of imaging departments by undertaking non-radiographic duties, while assistants were trained to undertake some imaging procedures under the supervision of a radiographer. Department C respondents voiced the strongest opposition to radiography helpers performing as assistants (Q. B.3a), 9 (90%) indicating that there were no aspects of radiographers' roles that they should perform. Yet it was in this department that helpers' roles had been most enhanced, to include room preparation and some tasks that were performed only by radiographers in Department A. In Department B radiography helpers had responsibility for information technology but did not perform traditional radiography helpers' tasks. It was only in Department A that a minority three respondents felt there was scope for radiography helpers to perform radiographic duties, believing they could undertake basic radiography, such as imaging of the chest. A Senior 1 radiographer also believed that they could perform intravenous injecting and another that they could work under direct radiological supervision in undertaking intravenous urograms and barium lists. Support activities, such as darkroom duties, image processing and general patient care duties were also regarded as appropriate.

There was even greater opposition when considering assistant practitioners performing radiographers' technical and imaging skills (Q. B3b), the majority (63%) of respondents feeling it inappropriate that radiographic assistants, to be called assistant practitioners under the four tier structure, should perform any aspect of radiographers' roles. Strongest opposition came from Departments B and C, Department A personnel again being more open to change, possibly reflecting the fact that it was the busiest of the three surveyed. While only two respondents in Department C considered assistant practitioners might produce images of the abdomen or basic appendicular skeleton, eight from Department A felt that they

could perform some basic radiography, described by two respondents as 'non complicated examinations'; altogether, 32% of radiographers felt that assistant practitioners could perform basic radiography, (straightforward, plain film, general imaging). One respondent suggested that assistant practitioners could give intravenous injections. Other roles suggested, as for helpers, related to non technical duties, such as patient care and assisting the radiologist, preparing rooms etc. Two respondents from Department A suggested assistants could prepare the patient for an imaging examination up to the point of exposure, a practise well established in Department C. It was assumed that radiographers would remain responsible for making exposures, having checking assistants' positioning of patients and image recording media.

When considering responses to Q. B3c, the majority of respondents (60%) considered that there were no aspects of their role which could be performed by anyone else (other than helpers or assistants), including all respondents in Department C, where helpers were already supporting radiographers by undertaking a substantial part of their non-radiographic duties. Opposition was comparatively strong in Department A, where 45% of radiographers felt that healthcare support workers could 'look after patients' needs', 'escort patients' and suggested that nurses could 'position' and 'prepare patients'. Department A was not only the busiest but also suffered the highest number of radiographer vacancies and was, therefore, most likely to benefit from the contributions of helpers or assistants in reducing radiographers' workload and waiting lists. One respondent also suggested that more radiographers should be trained, presumably obviating need for other health workers undertaking aspects of radiographers roles. The only roles identified by Department B's respondents were related to clerical duties and did not involve direct patient care. The response reflects the activities of the support workers in this department who were entirely responsible for information technology matters.

The future

Reporting was the activity that most respondents of Departments A and C felt that clinical radiographers should go on to perform (Q. B4). There was evidence

of this taking place in their departments, particularly in ultrasound and at interview was made it clear that most were keen to expand into this area. While some respondents were wary of the increased responsibility that reporting this would entail, most of those interviewed agreed that radiographers could competently engage in it. In Department A two radiographers were trained to report on accident and emergency images but radiologists' opposition had prevented them from doing so.

Not only did all respondents feel that 'role development' among radiographers should be actively encouraged (Q. B5a), all but four, in Department A, believed that most wanted to do so (Q. B5b). There was less consensus when considering if such expansion was being obstructed by other professionals (Q. B5c). While the majority (24) felt this to be the case, 14 disagreed. Notably, not one in the radiographer grade in Department C thought that there was obstruction, although four senior members of staff felt that other professionals were obstructing radiographers' development. Their experiences, as individuals who had been qualified for longer than their more junior counterparts, were no doubt factors in their responses. This same junior radiographer group in C also felt that, if radiographers continued to move into other areas, part of their existing work would not be undertaken by someone else (Q. B5d). Their responses contrasted with those of Departments A and B. In the latter, the 'role development' activities that were cited (Q.B4) included inserting Hickman lines, interventional radiology, barium enemas and barium meals, all predominantly radiologist led activities. Overall responses indicated there was discord as to whether 'development' would necessitate non radiographic staff undertaking aspects of radiographers' roles. When comparing the three departments, staff in Department A were most resigned to the fact that in order to develop into other areas 'others' would have to undertake some of their current roles, though responses to Q. B3b indicated, somewhat paradoxically, that they were unwilling for radiographic (image taking) activities to be devolved.

Radiography Education

Overall respondents felt that radiography education had prepared them well or very well for their roles both when they had first qualified (Q. C1a) and at later

stages in their careers (Q. C1b), preparation for initial roles scoring higher than 'at later stages' (Q. B1c), with ten respondents (26%) feeling they were poorly prepared for the latter (32% of those in Department A and 30% in C, while all of Department B's respondents felt well prepared). This result was unexpected, as we noted above, since Department B required radiographers to possess specific skills able to deal with the specialist nature of its patients. Respondents indicated that they did not consider current radiography education to be producing graduates of a similar quality as those emerging when they graduated (Q. C1a and Q. C1d) though current graduates were, nevertheless, in the main, considered to be performing well or very well by the majority of respondents, with only nine describing their performance as poor or very poor (Q. C1d). All of Department C respondents felt current graduates performed well in the workplace, while 25% of Department A's respondents and 4 of the 5 responses received from Department B (80%) expressed the view that graduates' performance was poor or very poor. The latter should be treated with some reservation, since neophytes were not employed in Department B.

Most (97%) felt that on qualifying radiographers should be competent in general radiography (Q. C2i) and have limited experience (Q. C2iii) of specialised procedures (76%), with 11% believing that graduates need have no experience of the latter (Q. C2ii). Responses were similar to Q. C2iv and Q. C.2v when considering if competency in one (26%) or several (25%) specialised procedures was necessary although, since the nature of these specialised procedures were not specified, this was earmarked as an issue which would be explored further at interview where a recently qualified graduate argued (Chapter Six) that competency in head scans, a specialised procedure, was unnecessary since she would not be permitted to undertake one for several years in Department A, by which time her skills would need updating. Had she been employed in Department C, however, she would have performed head scans within a few months of commencing employment. Competency in all specialised procedures (Q.Civ) was considered necessary by only one respondent in Department A.

When considering the content of the undergraduate programme there was no consensus on items which should be added or excluded, although a total of 25 different inclusions were felt necessary (Q.C3). Six respondents felt nothing should

be added (Q. C4), five of these from Department C (half of its respondents) and one from Department A. Seven in total believed nothing in the curriculum should be excluded or reduced (Q. C4) , with five of these being the same respondents from Department B who believed the content was sufficient. Ten admitted to having insufficient knowledge of the curriculum to answer. Six of these were from Department A, three from B and one from C. Lack of was knowledge was understandable from those in Department B, given that only a small number of students were placed in this specialised department on a relatively irregular basis. On the other hand, at least one cohort of students was present in Department A at any one time so that one would have expected all of its respondents to have knowledge of the content of their curriculum.

Among the elements thought worthy of addition to the curriculum, 'annual leave', 'old log books', and 'the 9-5 working week' (albeit by only three respondents) figured. If students were afforded 'annual leave' they would not enjoy the longer, set holidays of most university undergraduates but become entitled to a fixed number of leave days to be used each year, in this respect becoming more like part of the workforce than supernumerary students. 'Log books were used in the defunct Diploma of the College of Radiographers as a method of recording clinical practice and competence when a specified number of identified examinations had to be undertaken, either assisted by a radiographer or performed unaided by the end of training. Supervising radiographers' signatures were required for each. A 9-5 working week would eliminate the need for students to undertake night duties but require them to work the basic 35 hour week currently undertaken by radiographers. Students currently attended college or placement for 4.5 days a week and, being supernumerary, were afforded flexibility in their start and finish times. Setting the working week and annual leave entitlements of students might address the concerns of five respondents who felt that there was currently insufficient practical training/clinical education. Five respondents (three from department A and two from Department B) considered patient care was not included sufficiently in the curriculum. In Department C responses could have been influenced by the fact that nurses and helpers performed this function. Three respondents from Department A and one from Department B felt that IV injecting was not included sufficiently, not

surprising since injecting was the most frequently cited 'role development' activity undertaken.

Further Study

Only six respondents, all senior 2 or senior 1 level, were studying for formal qualifications (Q. D.8). One, from Department C, was training to undertake barium enema examinations and another in the same department was studying to be able to report on MRI images. Three were studying to become competent in mammography (one from Department A and two from Department B) with a further respondent from Department B undertaking a CT Head Interpretation course. All of these qualifications, with the exception of mammography, could be considered as constituting role development. Mammography was regarded as a specialist qualification for which radiographers underwent further training in the workplace and gaining such a qualification enhanced promotion prospects and provided credibility. 83% of respondents in Department B, 80% in Department C but only 38% from Department A felt that they were able to undertake sufficient post graduate education (Q. C5). Evidence supporting these responses were provided by responses to Q. D9, which revealed over the last two year period eight respondents had attended no study days, six from Department A and two from Department C). In total twelve had attended two and 27 between two and five.

Managers' Responses

While this section will focus on the main issues arising from the six managers' questionnaire responses, given their small number, it is even more necessary than in the case of our respondent radiographers to regard them as merely illustrative and descriptive rather than sources of generalisations. However, specific points of interest were raised during interviews with this group. For the purpose of this discussion the term 'managers' refers not only to Managers but also Superintendents whose role was predominantly managerial, with none or minimal clinical practice. Superintendents are identified as such where it is appropriate to distinguish their responses from their managers.

The six managers who completed questionnaires were the Directorate Manager with a base at Department A, a Superintendent 3 and Manager from Department B and two Superintendent 3 Radiographers and a Manager from Department C. One Superintendent 3 and the Manager from Department C did not undertake clinical radiography, unlike their counterparts elsewhere who participated in out of hours cover. This probably accounted for the fact that all managers except the Superintendent 3 and Manager from Department C regarded themselves as clinical radiographers, despite spending less than 14% of their time in clinical radiography (Q. A1b). Forbes and Prime (1999) had a similar experience when they found that radiography managers saw themselves as clinicians first and managers second. When describing how his job differed to that of other managers (Q. A9), the Superintendent 3 of Department C felt that, unlike his counterparts (for example in Department A), he had no clinical input. All but the Superintendent 3 from Department B considered they were budget holders and human resource managers. With the exception of the manager from Department B, who did not respond, all had some form of managerial qualification (Q. D7). With the exception of Department A's manager, all considered themselves to be administrators (Q. A2), describing themselves as decision makers, questioning of accepted practice, professional, team members, leaders, committee members and team builders, all traits of managers and leaders identified by the NHS Leadership Centre (2002). The managers in Departments A and C considered themselves to be statisticians. All considered themselves to be independent workers and team members (with the exception of Department A's manager) a contradiction engendered by the need to make decisions independently while still acting as members of healthcare teams. The Manager of Department A's workload was the highest at over 50 hours per week (Q. A6), although his contracted hours were 35 (Q.D6). With the exception of the Superintendent 3 of Department B (who did not respond to Q. D6) all managers worked in excess of their contracted hours and all were full-time, permanently employed (Q. D4 & D. 5). The number of radiography staff answerable to them (Q. A3i) ranged from 10 (Superintendent Department B) to 100+ staff for the Manager of Department A who was directorate manager responsible for those in other departments in the same trust. This manager was also responsible for 40+ support workers (Q. A3ii), while the managers of Department B who were responsible for

two in total. The numbers of ancillary staff each were responsible for was considerably lower, ranging from 3 (Department C) to 10 (Department A). A similar divergence was noted between the number of administrative staff answerable to managers (two each in Department B, 17 for the superintendent of Department C and 25 for the Manager of the same department, with 45+ answerable to the Manager of Department A) (Q.A3iv). Four nurses were answerable to the managers in Department C while in Department A the Manager indicated that 10+ nurses were answerable to him. Managers were, therefore, required to have an understanding of issues affecting a range of staff with different roles, responsibilities and skills who contributed to their imaging teams. Managers were accountable to either their Clinical Director or Director of Cancer Services (Q. A4a). This accountability served to reinforce the control and influence of medical professions, perceived as ubiquitous by all our radiographer respondents.

Managers were involved in a range of role development activities, such as intravenous injecting (Superintendent Department B and Manager Department C) and red-dotting (Manager Department A and Superintendent Department C). Consenting patients prior to intervention (Superintendent Department B) and acting as MR Protection Supervisor (Superintendent Department C) were also identified as, though not traditionally considered to be, role development activities. An additional 18 responsibilities were identified by Managers (Q. A8), for example equal opportunities, child protection, clinical governance, health and safety, IT systems management, Radiation Protection Supervision and Student Placement Co-ordination. The range of clinical and professional activities and responsibilities identified served to emphasise their skills and expertise, many having been acquired in the course of 'working their way through the ranks' and provided a raison d'être for discrepancies between their contracted hours and the actual hours that they reported working.

While there was no unanimity of opinion, fifteen attributes were identified as essential to managers' jobs, including patience, common sense, resilience, sense of humour, patient orientated attitudes, logical thinking, strategic thinking, flexibility, good people skills, HR skills, organisational and planning ability broad knowledge,

budgeting skill, decision making skill and knowledge of radiology process. Significant omissions were clinical radiographic skills or knowledge of radiography. Activities trained for but not undertaken (Q. A14) included clinical radiography (Manager Department B, Superintendent and Manager Department C), patient observation (Superintendent Department B) and equipment details (Manager Department A), all related to clinical practice. Observation was not an activity undertaken by any (Q. A10b).

Among the range of activities that managers did claim to undertake but felt that their initial training had not equipped them for (Q. A13) was audit (Manager Department C), administrative duties (Manager Department B), business planning (Manager Department C), human resource issues (Managers Departments A and C), information technology issues (Manager Department A, Superintendents Department B and C), management (all managers except the Superintendent 3 Department C) and statistics (Manager Department A).

The number of years spent by our managers in clinical radiography ranged from 18-37, with between 3 and 22 spent in managerial positions (Q. D11). When considering responses to Q. A14 and Q. A13 we might well ask whether radiography managers require clinical radiographic skills. Could their roles be adequately performed by managers with no radiography background? On qualification all our managers considered that they were competent in general radiography (Q. A16i), the Manager of Department C alone claiming to have been also competent in several specialised procedures, namely CT, nuclear medicine and neuro/angiography. We are left to wonder if this manager, who had trained 18 years previously, had an altogether different experience to that of all of his peers. At interview it transpired that he *'only started getting into specialist* areas' in year three of his pre registration training and that he considered his radiography education to be *'similar to that at present.'*

Managers considered that radiography helpers should perform supportive roles, such as general patient care, preparation for imaging examinations and administrative duties. The Manager of Department A felt that assistants could

support radiologists, undertaking fluoroscopic procedures, performing intravenous injections and carrying out basic radiography, the latter also supported by the Superintendent of Department B and Manager of Department C. Unlike other managers and, more significantly, their own Manager, two superintendents from Department C considered there was no role for assistant practitioners. In general, the role development activities for radiographers identified by managers (Q. B4) reflected the nature of the work each department performed. All felt that radiographers should be reporting with respondents from Department A and C also considering it appropriate that radiographers undertook barium studies (a collective term used to describe any examination where barium is introduced into the patient such as barium enemas, meals and swallows). The role development activities identified by Managers in Department B were related to interventional procedures, such as Hickman line insertion, in turn reflecting the needs of that particular department. Five of the six managers felt that role development among radiographers should be actively encouraged (Q. B5a), though the two superintendents of Department C felt most radiographers did not want to develop their roles.(Q. B5b). We have already noted above that these two respondents also considered there to be no need for assistant practitioners. Logically, if role development among radiographers was not to be actively pursued, requirements for assistants to undertake some of their roles was rendered unnecessary. At the same time, unlike conditions pertaining in Departments A and B, there appeared to be no obstruction to the role development of radiographers in Department C. Were these managers merely reflecting the relative disinclination of their colleagues to undertake 'development' when conditions for doing so were favourable?

As the employers of graduates managers' opinions of qualifying radiographers were considered to be significant, although it could be argued that their lack of involvement with the 'shop floor' of imaging departments made them less knowledgeable in relevant aspects of these matters than their clinical radiography counterparts. Whatever the case, these Managers wanted graduates to be competent in general radiography, with limited experience of specialised procedures (Q. C2). They unanimously agreed that it was perfectly possible that radiographers were able to undertake sufficient post graduate education, while

radiographers themselves were divided on the subject (Q. C5), a matter clearly deemed worthy of further exploration at interview.

The Superintendent and Managers of Department B recorded the greatest involvement in committees outside their imaging department and appeared to be more integrated into the general running of the hospital, possibly due to its relatively small size and specialised character. They also considered that they worked as a team with the other members of their department in making decisions.

All of them claimed that nursing duties were skills learnt as students but never used. All also agreed with their clinical colleagues that competence in general radiography was essential for all graduates and that some knowledge of special imaging procedures was sufficient for new graduates, that the radiography curriculum was adequate and that radiographers performed well in their roles when first qualified. All had obtained further qualifications, the manager of Department C, who had achieved a management post earlier in his career than other respondents, possessing most. They considered themselves no more than their clinical colleagues to be researchers or technicians.

From questionnaires to interviews

I had anticipated that the questionnaires would provide insight into the shape and trajectory of radiographers work and opinions and enable clearer reflection on radiography education through constructing pictures of the task structures and cultures existing in three contrasting departments. I had also planned that an initial review of their content would enable me to identify issues and respondents needing further exploration at interview. It was hoped that the data would be sufficient to gain a picture of the service, illuminating if and why diversity and similarities existed between respondents and their departments. It was anticipated that differences would emerge in attitudes, work culture and radiography education.

It was predicted that Department A, being the largest department in terms of staff employed, equipment and examinations would offer the greatest opportunities

for gaining expertise in specialist areas. However the converse was found to be the case, possibly because of problems associated with ensuring that competence was maintained when, given the number of staff involved, significant time elapsed between once placement and the next. For this reason specialist staff were permanently employed in these areas in Department A, with a small number of staff on a rota as support, in order to sustain standards of practice. The smaller Department B offered the greatest opportunity for specialist training and showed proportionally more staff participating in specialist examinations, closely followed by Department C. In Departments B and C rota arrangements ensured that all staff could be trained and update their skills frequently in appropriate areas.

Department B's respondents and managers displayed what might be regarded in certain respects to be rather elitist attitudes, believing that only experienced radiographers with specific interpersonal skills only could be employed to work with cancer patients. This required further investigation. Communication, team working, compassion and patience were behaviours that its respondents identified as being important to their roles and which should be included in the radiography curriculum. It appeared that these skills were essential to deal with the terminally ill and cancer patients for whom they cared and would be explored further at interview. Helpers' activities in this department were concentrated in IT and respondents were divided as to whether 'others' and specifically assistant practitioners could satisfactorily perform radiographers' roles. Stronger opinions against non-radiographers performing imaging examinations was voiced in Department C where, unlike Department A, staffing shortages had never been seriously experienced and the need for assistance to deal with workloads had not arisen. The Manager of Department C had indicated that many staff were not open to change, having been in the same department since qualification.

There appeared to be enthusiasm for role development by Department A's respondents but they also evinced the greatest opposition. The Department appeared to be governed by radiologists in the guise of its Clinical Director and Directorate, whereas in the other two departments partnership and joint management between radiographers and radiologists appeared more evident. The

minimal role development activities taking place in this department appeared to be due to opposition from radiologists but may also be attributed to lack of commitment from the manager to drive such initiatives forward. And since Department A was in a teaching hospital, radiologist training took priority in areas traditionally earmarked for radiographers' role development. Conversely, in Department B the ethos of the department and specifically the attitudes of managers and superintendents ensured that radiographers were given opportunities to gain expertise in specialised areas and maximise role development opportunities. This also occurred to a slightly lesser extent in Department C where radiographers appeared to be enthusiastic regarding role development but managers considered that some were less so. Department A's Manager considered that radiographers were afforded adequate opportunity to undertake post graduate education while his staff did not. Competition amongst staff, lack of resources *qua* time and money appeared to contribute to perceived lack of opportunity for education in Department A but was not the whole story. In Departments B and C managers and staff agreed that postgraduate education opportunities were sufficient but differed as to the inclination of staff to avail themselves of them. These discrepancies that apparently existed between the views of managers and their staff concerning continuing professional development (CPD) activities was another apparent contradiction revealed by questionnaire responses to be taken up at interview.

While in a minority, nearly a quarter of all respondents felt that radiographers currently qualifying were ill prepared and performing poorly in the workplace. In Department C however, it was universally considered that students were well prepared and performed well. Was such inconsistency of response a feature of differing organisational arrangements for engendering awareness among staff concerning students' characteristics and needs, or symptomatic of deep rooted prejudice on the part of individuals against degree students, or had some institutions or individuals suffered bad experiences of recent graduates? The lack of consensus on the content and appropriateness of radiography education required further investigation, particularly since it was dependent on the role of many individuals in each department. This and many of the other generic and individual puzzles thrown up by questionnaire responses seemed ripe for the sort of face to face, respondent-

centred interaction which interviews afford, permitting difficult, even relatively dangerous, views to be aired and discussed. It is to these that we now turn.

Chapter Six

Interviews

Introduction

This chapter brings together themes from interviews relating to radiographers' and managers' roles enabling comparisons to be made between informants and their work environments, mainly by providing pictures of what they claim to do in the three different settings described in Chapter Four. Specific interview questions put to individuals, in addition to the general issues outlined in Chapter Four, are incorporated in the main text. Informants often introduced unanticipated issues which were explored whenever it seemed appropriate. The theme that ran most consistently throughout these interviews concerned what we referred to in Chapter Two as 'role development', encoded reference mainly to processes whereby radiographers came to undertake jobs and activities hitherto undertaken by radiologists. Views were frequently expressed as to why these took place, whether they should, who embraced and benefited from them and how they affected the status and prospects of radiographers. These issues recur throughout this chapter. It is salutary at this point to consider how mundane and usual such processes as these are, those in radiography being little different from changes in policy and practice elsewhere in the public service. For example, a Senior 1 in Department A felt that some radiographers were taking on role development activities simply because they were unhappy with the job they were doing and not because they considered that they would benefit patients. At the same time, the Superintendent 3 of Department A was of the opinion that those making decisions at national level regarding such changing practice were reacting to an established situation rather than being proactive:

> *'changes in the delivery of service* [...] *it tends to come from the shop floor. Now half the time what they agree to has already started happening and they're agreeing to it because they have no blinking choice. I think that's the*

way it's happened with radiography reporting you know [...] *people started doing it and now people are reacting to it and I think the management structure at the top whether it's at the Society* (of Radiographers) *or the School* (Department of Radiography Education) *or the National Health Service as a whole* [...] *isn't very proactive at all. It's reactive* [...] *it reacts many times to what happens on the shop floor because it's scared of losing control.'*

These views seem to confirm both the well known, general, social science rules that even professional behaviour is best thought of as being largely motivated by self interest and that in organisational contexts, notwithstanding the best laid plans, not only does 'stuff just happen' but, in policy terms, what happened before tends to be the best predictor of what will happen again. We might usefully remember Skocpol's (1992) dictum that the best predictor of any given public sector policy is the content and character of the one that preceded it. As we have already noted in earlier chapters, the changing nature of radiography and radiographic practice has meant that what was once considered role development is now accepted as routine e.g. intravenous injecting and abnormality recognition. The boundary between specialisation and routine practice is becoming blurred, for example vascular imaging, once the forte of specialist departments, is less invasive and is undertaken more frequently than in previous years and is considered to be normal, accepted practice, rather than a specialised technique. Radiographers' work extends into domains previously those of other professionals, usually radiologists, including undertaking barium enema sessions, intravenous injecting, reporting, line insertions and having complete autonomy in previously radiologist-led examinations, such as radionuclide imaging. The type and amount of such change taking place varies between departments and radiographers' interest and enthusiasm for them is not to be taken for granted. Moreover, several respondents, such as the Superintendents 2 and 3 of Department A were keen to emphasise not only that 'development' ought not to regarded as *'taking on someone else's role'* but had to be justified as ways of improving service for patients. As their Senior 1 colleague, referring to how his ability to report on accident and emergency films reduced patient waiting times, claimed:

'I think that the important thing is that it is appropriate that people aren't simply going into an area [...] *or professions aren't simply going into an area simply because they feel that it benefits them as a profession rather than the patient. I think there is a degree of that going on in some areas.'*

At the same time, while staff shortages and improved patient care appeared to be adduced by policymakers as driving forces behind such change, financial reasons could not be ruled out; according to the Superintendent 3 of Department A. As the Senior One of Department B put it:

'I think the government have realised they've got a very cheap way of providing high quality healthcare instead of using doctors who themselves are getting so multiskilled they are becoming deskilled in a lot of areas they can now specialise a radiographer or a nurse to give an extremely high standard of care and at a fraction of the cost. We think we are improving ourselves and our profession and our profile and I think a lot of people see [...] *it's like empire building in that they are the only one that's able to do this* [...] *that makes them more important and I think a lot of people like that. I certainly look at that sort of thing that that's the way to carve a niche and make yourself indispensable is to find something you can do that no one else can do and you are then indispensable and that's the way I think we are going to go at the top.'*

Again, such processes were and are not unique with respect of radiographers. Teachers, nurses, doctors, lawyers and police, among other occupational groups, have all been embroiled in redefining the boundaries of their work with adjacent occupational groups, both in the interests of funding and putatively more efficient skill mix.

In this chapter we context these issues in interviewees' accounts of their practices, paying particular reference to issues of responsibility, autonomy and control, scope of practice and rotation and specialisation. Issues of management occur throughout, though there is a short section dealing specifically with managers'

views. Chapter Seven deals with radiography education as a separate, though dependent, issue.

Aspects of Radiographers' Practices

The Curriculum Framework (College of Radiographers, 2003a) described a key aspect of radiographers' roles as the management of complex interpersonal dynamics in what is sometimes a short episode of care. During that time, diagnostic radiographers are expected to take responsibility for the physical and psychological well being of patients, working independently and frequently in situations where they are required to make rapid professional judgments using their scientific, technical and patient care-related knowledge base. However, they operate in a matrix of power and control where radiologists are dominant and nurses increasingly liable to be claiming a part in decision-making.

Responsibility, autonomy and control

A radiographer in Department A with less than six months experience had discovered that, while her role as a qualified practitioner was *'more or less what I thought'*, it was significantly more *'involved'*, with more organisation and responsibility, than she had anticipated. As a qualified radiographer she had been shocked that she had to account for her actions to other health professionals, such as consultants and that she could no longer 'pass the buck' by saying *'I'm a student, I don't know'*. She did not feel that her job was much different to that of any other radiographer at the same career stage, although she did feel that, as she had been a student in the Department in which she had gained her first appointment, staff *'did not expect me to know more than I actually know'*. This new graduate felt she had *'made the break'* from being a student and was able to work independently most of the time. She did concede that there were situations when she was unsure of the protocols to be followed, for example, when a patient returned for a chest x-ray two days after previous examination, having to ask a colleague if she could undertake it as requested. In the Accident and Emergency department she had felt able to make

her own decisions because, as she explained, *'there's no boss'*, although there was a Senior 1 and a Superintendent in charge of the x-ray unit:

> *'I think you're more your own boss in A&E but in the department I ask people more. In A&E* [...] *if a request form comes in and it looks a bit dodgy* [...] *like if the request form says "twisted ankle" and they're asking for a foot then I'll do the ankle. I make my own mind up down in A&E but in the main department I wouldn't and I don't know why. I think it's because there's more people to ask and in A&E everyone just does what they think is right. In the main department I usually ask another radiographer and sometimes they'll say go and ask a radiologist* [...] *if it's a weird request but sometimes the radiographer can give advice on what should be done and I just do it'.*

It could be argued that difference in the working ethos in the accident and emergency department could be attributed to its location, remote from the main department, with an abundance of radiography and radiology staff, in a context necessitating decisions be made quickly and autonomously. Its work is imbued with a sense of urgency, echoing a persistent finding in the nursing literature that staff in surgical and emergency treatment contexts tend to have more autonomy than those in medical wards.

In Department B a Senior 2 described how inappropriate requests were returned to requesting clinicians, sometimes having first consulted with colleagues or, if there was a large degree of uncertainty, radiologists:

> *'Usually either you bleep the doctor concerned or send the request form back saying it's inadequate. We still make the decision to confirm with each other or if we're really unsure then we'll ask the radiologist. Especially if its bariums or something that they* (the radiologist) *is going to be doing. I suppose most of the time you go off your own back and send it back or at least phone the doctor who's requested it saying why are you wanting this, which they don't like'.*

The Senior 2 radiographer in Department A considered himself to be a 'clinical decision maker'. When describing his role he said:

> *'Basically I run the chest room. I organise everything that's in there* [...] *any decisions that are made on chest films, I make them and then I work alongside a radiologist in in-patient reporting but sometimes you can't find them so basically it just all falls back on me* [...].*and that's the main difference. I just seem to be a decision maker* [...] *a clinical decision maker which is different to other people.'*

Moreover:

> *'further projections, I sort them out...diagnosing what is wrong with the patient, whether it's a Ca* (carcinoma) *or pneumonia whether it's a cardiac problem and then progressing it into the relevant areas'.*

However, it appeared that such decisions we not taken unilaterally, as might have been implied. He further commented:

> *'After doing the PA (postero-anterior projection) I would show it out to the radiologist. If the radiologist isn't there I would look at the film, decide if it needed a lateral or not and then keep the film on one side until I got a radiologist.'*

If radiologists were available they made decisions as to further investigations or any other action, as necessary, for example admitting patients to hospital or faxing radiological reports to their general practitioners. When radiologists were unavailable radiographers ensured that images were reported on as soon as possible, the Senior 2 recommending that patients saw their general practitioner within forty-eight hours:

> *'If a patient comes in with a pneumonia from their GP the same sort of thing applies* [...] *if a radiologist is there I show it out* (the film to the radiologist)

and then get the radiologist to ring downstairs (to admissions) *because the way it stands at the moment we can't ring casualty and say we're sending patients down* [...] *it has to be a radiologist or a doctor or they won't accept the patient'.*

When asked if he thought that this should be within the scope of practice of radiographers, he commented:

'If they're experienced enough then yes, I think so [...] *I think I've definitely got the relevant experience to do it but I'm not allowed to do it at the moment* [...] *it's the radiologist's domain and we're not allowed. Flagging things up though* [...] *if I'm not there then it doesn't get done. There's nobody within the department that has got the same level of expertise and expertise in my area* [...] *to do that except for maybe Sally or Jane and that's about it'.*

The two radiographers he referred to worked exclusively in general radiography and would, therefore, have had *'the necessary experience'.*

In Department C radiographers felt they were able to make decisions regarding any further projections required:

'We work very closely with A&E and if we have an inappropriate request we do what we think is right and walk around there and tell them. We usually don't have any trouble, only with the nurse practitioners, the casualty officers are OK. With the ward it's more or less the same process, if we think further films are needed we just do them, if we think the request is a bit dodgy we tell them that too. It's only of we can't [...] *get them to see our way of thinking or if we can't agree that we need a radiologist. Then, they usually back us up'.* (Senior 2, Department C)

As a consequence of their inexperience and working to strict protocols nurse practitioners objected to radiographers questioning examination requests, refusing

to perform what they considered inappropriate examinations or undertaking additional and/or alternative projections to those specified.

A Senior 1 employed by Department A also worked single-handed in two smaller hospitals, D and E:

> *'I work single-handed and I do ultrasound as well. I'm not sure whether it's the fact that I work single-handed or because I'm DMU qualified that makes me different.'*

His role was unlike any other radiographer in this study, working alone, performing and reporting on ultrasound. The patients he scanned in Department D were all paraplegic, requiring considerable modification of radiographic technique and manual handling. He felt he was *'permitted'* to report on the scans because the radiologist concerned *'doesn't want to report on them himself. It's less work for him if I do them, I'm happy to do that but I'd like to do more so I think that's my next step'.* In contrast, the radiologists of Department A would not permit the Superintendent 3 who worked exclusively in radionuclide imaging to report:

> *'I would love to report but politically I'm not going to be able to. Almost certainly the radiologists won't allow it* [...] *You need to have the support of the radiologists and we don't have it...basically any reporting that comes along there's a fight to actually report'.*

This situation was typical of the departments participating in this study, although radiographers in Department B seemed to experience more support than those the other departments. A Senior 1 of Department B considered that the IR(ME)R regulations had increased radiographers' responsibility for radiation protection of patients, the outcome of which he explained as:

> *'radiographers are a lot more autonomous than they used to be and less reliant on what radiologists tell them to do* [...] *and I think radiographers have*

more power now [...] *I think the IRMER regulations reinforced that and made us realise how much more responsible we are'.*

Radiologists rule, OK?

Radiographers' autonomy appeared to be influenced by the practices, personalities and training requirements of radiologists within their departments. Traditionally radiologists have been in complete control of imaging departments and some have found it difficult to accept that radiographers are now able to decide the course of imaging examinations and take on roles, particularly reporting, which were exclusively theirs. At the same time, it was evident that registrar radiologists valued and used the expertise of radiographers, such as that of Superintendent 3 in Department A, who commented:

*'If they (*registrar radiologists*) are reporting in the afternoons and they get stuck rather than take things out to a consultant they will come round and find Fred or myself and they know we're here and they'll actually ask us for our opinions so I think they value that. Certainly I know with Mary and Jill doing the enemas they've huge support from the radiologists who've trained them.'*

At the same time, radiographers in Department A, with the greatest concentration of radiologists, seemed to be afforded the least independence, with Department B staff enjoying more autonomy and role development opportunities than them and their peers in Department C. Of all the 'new' activities that respondents felt they should perform, 74% were currently or traditionally radiologist led. Reporting was the activity most respondents felt they should undertake, which a Senior 1 radiographer from Department A believed that radiologists would support if they felt it would enable extension of their own roles or reduce their workload. Intravenous injecting, previously performed solely by radiologists in imaging departments was now being undertaken by 47% of respondents, the majority of them based in Department C and the fewest in Department A. Both are examined in more detail below. It became evident as the study progressed, not least from the frankness with which information

and opinion was conveyed on the matter at interview, that radiologist support was believed by our respondents to be the key influencing factor in their 'role development'. Expansion relied on radiologists relinquishing roles and providing support and guidance during radiographers' training. Concomitantly, their opposition to development was the most common reason cited for tardiness in this area.

We saw in Chapter Three that radiographers can provide an equivalent service to that provided by radiologists. No doubt, much of the literature that has sought to establish the reasonability of such parity has been motivated by considerable amounts of radiologist opposition to radiographers' advancement. Most of the literature, for example Culpan et al. (2002), Pauli et al. (1996) and Lo et al. (2003) has been supportive of radiographers moving into previously radiologist-dominated areas, such as barium enema examinations. Bewell and Chapman (1996) found that, even when trained, radiographers found it difficult to perform them since their skills and expertise were required elsewhere. Where they did, each session might be 'supervised' by different consultants, each insisting on their own protocol being followed. This problem was not highlighted by any of the respondents in this study, since in their departments protocols were agreed and they performed enemas unsupervised, requesting radiological support as necessary. This reflected practice that had existed for many years, the Leeds training programme being regarded as the 'gold standard'. Barium enemas have traditionally been undertaken by radiologists in training with little or no supervision and considered to be investigations that they wished to relinquish. However, this was not evident in all departments in this study.

While all barium enema reporting was undertaken by radiologists in the departments in this study, Superintendent 3 of Department A described how a change of radiologists had altered relationships:

> *'In the beginning there wasn't* (support). *I've been doing them now for about four years and there wasn't a lot of support in the beginning because it was Dr Z* [...] *but now we've fantastic support and Mary and I train the registrars and it's become more formal.'*

In contrast, Superintendent 3 in Department C reported that radiologists were reluctant for radiographers to perform barium enemas as they *'saw it as their domain'*, though he felt that the former were better at performing them *'because they're more methodical and their patient care is better.'* While admitting that the job was highly technical he felt that radiography was *'a caring profession'* requiring a combination of technical skills with those he described as *'looking after patients, it's what we do'*, suggesting that radiologists lacked these skills. In similar vein, a Superintendent 2 claimed, *'we've all stood around and watched a junior registrar attempt to do some things and you know perfectly well you could do better.'* Similar situations, of course, occur in many professions. Clinical and biomedical scientists suffer from the same criticism, the former receiving a higher salary and greater kudos than their biomedical counterparts who, in many situations, perform the same role and offer guidance to their superiors. Ironically, the same superintendent had also stated that radiography helpers, considering the prospect of upgrading to assistant practitioner status, were being over-confident in believing that radiography was easy when, in fact, she explained, it was *'nothing of the sort.'*

The Superintendent 3 of Department A questioned radiologist and medical support:

> *'The whole financial package needs sorting out at the same time as the role development. I think like a lot of things there are going to be little branches that sprout up and we might head down that route but there's so much seems to be going on at the moment like injecting, interventional stuff perhaps, the bariums if the medics get the confidence that we're not going to threaten them then* [...] *they aren't going to want to give up anything really that might threaten them and take some of the work away that they want to hold onto* [...] *you just don't know what you are going to get support for. It seems to vary wherever you are.'*

According to a Superintendent 3 of Department B, radiographers' role development, which was not universally acceptable even among themselves, was

still in its early stages, having *'a little while'* to go before its aims could be said to have been achieved:

> *'In terms of role development* [...] *the biggest hold back to that in this place and certainly in other places is the radiologists and the medics* [...] *they're such a strong bunch they're not going to let us progress. It's only if they are going to see a net benefit from their point of view. I would like to see it progress. I would like radiographers to have a little bit more autonomy and in terms of role development I think we undersell ourselves.'*

The Senior 1 radiographer in Department B considered that while his department was *'a bit slow'*, role development was occurring across the country, dependent on the attitudes of radiologists (specifically consultant radiologists) and clinical directors. When considering the future direction of radiographers he said:

> *'I don't think an awful lot is going to change but I don't think we're going to get on as far as some people think we're going to get on* [...] *although I welcome extending the role I don't know how far its going to extend because depending on the department you're in...but generally you'll be finding in our job that a lot of departments, there seems to be little parity through different departments in different parts of the country* [...] *you see some people are very supportive of role extension and others are not. We're slow here'.*

As in other departments, he identified the clinical director, a radiologist, as the main opposition to radiographers' role development but argued that it was an evolutionary process:

> *'Usually it's because the clinical director isn't in favour but they often come round eventually* [...] *they weren't going to do enemas here but we do them now. There's opposition here too to reporting. I think it'll come eventually...it'll have to because other places are doing it* [...] (Department A) *were against it originally* [...] *one of the consultant there was very against it, I believe but they all come round to it eventually'.*

While radiologists were considered the main opposition, the Superintendent 3 of Department B had a positive view of role development for radiographers:

> *'I think role development has changed a lot of things. We are doing thing now we never used to do. Personally I think that's very good. It makes the job much more interesting. There is resistance from radiologists to radiographers taking on more. It's not as bad as it was a couple of years or so ago. I think it's worse in some areas than others* [...] *I hope the role development carries on because I think that's a good thing for radiographers'.*

Conversations that the manager of Department A had held with radiologists had appeared supportive though, in reality, he considered them unhelpful and opposed to radiographers' role development:

> *"Yes we want to do it but my colleagues won't support it"* [...] *so there was enlightenment but there wasn't necessarily a willingness to fight the fight on behalf of it. There are good examples of people* [...] *Dr P and Dr Q have pushed it for their own different political reasons but I think that is changing but that's because we don't have enough staff and it's also changing because people don't want to do what they are actually paid to do. Radiologists to a certain extent* [...] *part of their role is to perform a certain function but they find it far more interesting, far more rewarding to take on the advanced roles such as interventional stuff in vascular, MRI and CT but they still have the other work to do so naturally they are looking to offload some of that work onto others.'*

For example, the opposition cited earlier to radiographers reporting in accident and emergency could either be attributed negatively to radiologists' exercise of professional control or more positively as protection of this activity as a necessary training ground for aspiring radiologists. It did appear that there were specific influences in different departments, including radiologists' reluctance, which either supported or opposed radiographers' role development. Many of those interviewed

were well aware of this fact and some had changed their places of work to departments where it was possible to extend their scope of practice, recognising the necessity to it of radiologists' support, as well as catching the tides of health service policy initiatives: The Manager of Department A also made the point that it was a misconception that role development was far easier in a training hospital. The need for radiologists to train other staff, combined with the opportunities to participate in and develop new techniques, sometimes precluded radiographers' role advancement:

> *'Radiologists to a certain extent [...] part of their role is to perform a certain function but they find it far more interesting, far more rewarding to take on the advanced roles such as interventional stuff in vascular, MRI and CT but they still have the other work to do so naturally they are looking to offload some of that work on to others.'*

Radiologists' support for radiographers to develop their roles was not universal within the same department. The comments of different radiologists in Department A were exemplified by its Manager as:

> *'"Over my dead body. No way not in a month of Sundays" and others who are saying "Why the hell aren't you people doing these things" and the third group who are saying "Why are you doing these things and getting paid such a low salary for it?" There are some very differing opinions. What seems to appear [...] that it's OK for an individual basis "I think Joe Bloggs is an excellent radiographer they're fantastic, I'm pals with them and I think they're good and I'll let them develop" but when the department looks and says let's look at developing others "I will resist them because I will have lost my control over that area". Unfortunately that's what's happening in some areas'.*

A Senior 1 employed in Department C felt that role development was more advanced in her current department than in other departments where she had worked. MRI radiologists had not allowed radiographers to inject in her two previous posts (in a mobile MRI unit and a large district general hospital), the reasons for

which were never adduced publicly but were thought to be linked to the personalities involved and their preconceived ideas regarding radiographers' place. Performing cannulations seems to have developed in the same way as other roles. Initially radiologists were opposed but gradually gave support. One interviewee recalled how originally radiologists had opposed radiographers injecting in Department A but now it was common practice. All the radiographers working in CT were trained to inject, as well as those in barium enemas and the radionuclide imaging room, though plans to allow radiographer led intravenous urograms had been halted by a radiologist.

Radiologist support for radiographers' role development was, then, provided in Department A, but within boundaries, indicating unwillingness to relinquish overall control in specific areas, a situation which manifested itself less in the other departments in this study. This greater unwillingness may have been due to the need in this department to train radiologists in specific examinations, although its radiographers were, in turn, training them to undertake barium enemas, a task which, we have already noted, radiologists appeared happy to relinquish. In the same Department, a Superintendent 3 had extensive experience in radio nuclide imaging and was regarded nationally as an expert in his field, yet radiologists had refused to allow him to report, an activity which we have seen, they were particularly loath to surrender as near to the heart of their control of public knowledge. The Superintendent 3 commented:

> *'I would love to report but politically I'm not going to be able to. Almost certainly the radiologists won't allow it* [...] *although I do lecture on the reporting course being run in a local university. You need to have the support of the radiologists and we don't have it. I've been supported in everything else that I've tried to attempt* [...] *actually doing the processing...historically in a lot of places radiographers or technologists working within nuclear medicine departments don't get to analyse and process their own data-that's left to the physics people certainly like the clinical scientists or the junior medical physicists. That's not the case here we actually write our own protocols for requisitioning and certainly write our own protocols for*

processing the data so development wise I personally I think it's taken for granted. I don't think people realise the work that we do [...] *by people I mean other radiographers and radiologists. With regards to reporting I don't think I'd have the support of the consultant in charge and we've also taken on a training role for radiologists to do their 5th and 6th year as a nuclear medicine specialist so now they've got to report on x amount of investigations so basically any reporting that comes along there's a fight to actually report.'*

But a Superintendent in Department A added that he was not convinced that radiologists were inhibiting change:

'I don't think it's the radiologists because [...] *I think here there was quite a lot of support from radiologists...but it's just a wait and see job but perhaps that's one avenue you know* [...] *I would imagine in other places radiographers are doing their own sessions so certainly where CT is regarded you've got a specialised person in their now who knows the scanner backwards and can advise other radiographers and radiologists on what protocols to use because the work is...it's increased so much.'*

Uncertainty was the order of the day for a Senior 2 of Department B who related how, when employed in Department A, he had seen that radiologists:

'were very reluctant for radiographers even to cannulate and I know in some hospitals it's quite difficult [...] *you fight every step of the way. I don't know necessarily here whether we would be able to do certain things like mammo reporting* [...] *I don't know* [...] *I think it's a case of wait and see because you just don't know, you never know with radiologists.'*

Radiologists were considered to have *'a very big say'* in what happened developmentally in departments since:

'We'd need them to teach us and even if you go elsewhere for your training you need in house support as I said [...] *and if you don't have that then you can't do it so the radiologists do play a big role.'*

Radiologists' reluctance was *'understandable'*, akin to radiographers' misgivings regarding assistant practitioners.

The Superintendent 3 of Department B believed that change had been *'allowed'* since it benefited medical staff, not because it helped the radiography profession. He did acknowledge that it had improved service to patients, though:

'there's a lot of stuff that they won't give up. Line insertions here would be a prime example. There's no reason why we couldn't train a radiographer, at least one to do line insertions an example. I have to be honest Dr X doesn't want to put Hickman lines in but wouldn't oversee, supervise them being put in. It's a bit of a sad situation because there are people who want to do it, people who would be competent to do it they'd be excellent in doing it but unless it would benefit the medics then we are not going to do it.'

A Senior 2 in the same department took the same view, commenting that *'radiographers* [...] *would not be allowed to expand into this area,'* while a part time Senior 2 Radiographer in Department A saw change as driven by a combination of radiologists' interests and what might be termed a certain random pragmatism:

'Obviously it's going to free up radiologists to do other things to do their reporting or to do more difficult examinations...the more people that can do things like that (line insertions) the waiting lists are going to be cut down [...] *Again politically it's very difficult knowing what you are going to get support for. It seems to vary wherever you are and there is no national direction. It depends what department you're in.'*

General lack of support from radiologists was, then, a complex issue within which the attitudes of individuals had strong influence. Not only did the need to train

radiologists, already highlighted, take priority, hindering expansion of radiographers' roles but, as the Superintendents 3 of both Department C and Department B felt, the varying attitudes of radiologists in each department resulted in radiographers of the same grade and job title commonly having different roles and responsibilities, depending on the opinion of their radiologists. Persuasion tantamount to nagging was sometimes necessary before change was achieved:

> *'I'll be perfectly honest radiographers are governed by what radiologists in their particular department want to do. I don't think you are ever going to get to a stage where we're going to have 'this is now the new role for radiographers' because any new roles are basically roles that were taken from radiologists so I think wherever you go its going to be departmental based. I think it'll be incremental...same as here* [...] *we looked at i.v. injections and things-initially that was taken on...that was fine, no problem. We looked at enemas but there was no great sort of 'Yes let's do enemas' from the radiologists. It was a nagging process "Why don't we* [...] *Why don't we do this?* [...]*" gradually pushing, gradually getting people to do it and then the acceptance and now I'm sure they wouldn't go back. The radiologists were reluctant...they didn't want to give it up but now they give away as many sessions as possible and the radiographers do, probably as much as 75% of all the screening.'* (Superintendent 3, Department C)

Two Senior two radiographers in the same department, eager to expand their roles further, identified radiologists' opposition as relating to career considerations. The Superintendent 3 of Department C also perceived that radiologists' apparent lack of support could be influenced by fear that appointment of consultant radiologists could be adversely influenced by radiographers' advance. He also likened this unwillingness to that existing between radiographers and assistant practitioners:

> *'I talk about not wanting the assistant practitioners to come and do more radiography and the Society* (of Radiographers), *I think, specifically keep saying* [...] *well radiographers will be expanding upwards* [...] *well they won't, because the radiographers will be compressed* [...] *because the radiologists*

will only allow a certain amount of expansion upwards and then if you let more in the middle, radiography will be a compressed profession rather than an expanded profession.'

Reporting, the real pinch point?

Skilled occupational, particularly professional, groups, define themselves by drawing lines in the sand over which those deemed to be lesser qualified and unlicensed may not cross without explicit permission. We may regard this as part of an even wider phenomenon of how knowledge is linked to power, in Foucault's (1994) view, indissolubly so. In more everyday, organisational terms it is useful to remember Crozier's (1964) dictum that power resides in the ability to solve a crisis and real power in the ability to create it in the first place in the knowledge that one has the means of its solution to hand. 'Reporting' in the radiographic world seems to be the process that goes beyond mere technique and constitutes the public knowledge capable of assisting diagnoses which preface 'solutions'. No doubt it is something of this sort that ensured that it appeared to be the one most clearly delineated issue in the litany of radiographer-radiologist 'role development' conflicts rehearsed by interviewees. For example, in Department C 90% of respondents expressed a willingness to participate in some form of reporting, contradicting the view that their manager held of them that *'(W)e have a fairly lethargic workforce* [...] *we push them to train* [...] *they are not knocking on our doors* [...] *we have to push people into roles.'* Indicatively, he did not have a clinical role and was very much involved in strategic issues, relying on his superintendents to deal with everyday issues and communicate with staff. His Superintendent 3 claimed that:

Again, we've looked at things like radiographers reporting but the radiologists won't touch it. We keep nagging we keep looking at it we look at various little issues around it and eventually we might start toppling them again but it's a long process. There's none of the radiologists running out and saying 'Look what the radiographers can do instead', they'd much rather wait and get another consultant radiologist in post because of their range of skills because the same design as with an assistant practitioner you could say,

yes you might be able to train people to do chests but they couldn't do everything. The radiologists are probably thinking 'Well, if we hang on we'll probably get a consultant who can do everything rather than a radiographer who can report extremities [...] *the radiologists would look at critically what the radiographer is doing and would probably think if we hang on and make more of an issue of not being able to report, we're not having another way of doing it they won't have to get funding to find a consultant.'*

This radiographer felt that opposition came particularly from radiologists not involved in training and registrars who felt that their own training, particularly in accident and emergency, would be compromised.

'I think [...] *I don't know* [...] *but I wouldn't be surprised if there was some ill feeling in radiology towards it from some people. Certainly the consultant radiologist who helped train us, because we had to have a mentor* [...] *they were the musculo-skeletal consultants all three of them are very supportive. So I think if there is any dissent it will be from other radiologists who didn't take part in any of the training but I can't really second guess them without...I suspect if they disagree it might be because they can see some of their duties going to radiographers ... to non-medical staff. I suspect but as I say I can't put word into their mouth but I suspect it would be because of something like that...and the thin end of the wedge argument. The other thing some of them feel that it would have a negative impact on the registrar training because one or two of the registrars have said to me "Well how will we learn A&E reporting if you guys are doing it?".'*

The gradual process of moving toward reporting accident and emergency referrals involved identifying images which were abnormal, called 'red dotting'. In Department C this was undertaken by all radiographers to assist referring clinicians to make a diagnosis. It was recognised that experienced radiographers were in better positions to identify abnormalities on an image than an inexperienced medical practitioner. When considering the performance of radiographers involved in the red dot scheme a Senior 2 from Department C commented:

'I think you over call things with red dots. If people do red dot courses their detection rate actually increases for the first 3 months apparently they over call things and then it sorts of settles down and within 6 months its back to normal.'

This process was being expanded in Department C (and potentially in Department A) to involve reporting by radiographers. In Department C the manager envisaged radiographers would commence reporting on accident and emergency images and this would then be expanded to include other areas:

'I think A&E (accident and emergency) to begin with but I think it'll go the same way as other things...we'll start off small, a bit like ultrasound we started off doing ante-natals and finally became the experts in ante-natal [...] *to begin with...because radiologists would always come in with the complicated case but they are not doing that anymore.'*

Brealey et al. (2003) found no significant difference between radiographers' and consultant radiologists' ability to report on accident and emergency and general practitioner plain radiography x-ray examinations. They concluded that it was feasible to expand the reporting role of suitably trained radiographers to include plain radiography with no detriment to the quality of the reports. In 2002, when investigating healthcare professionals' attitudes towards radiographers' accident and emergency films, Brealey at al: concluded that all groups found the process acceptable. However, such evidence in support of the competence of radiographers in reporting accident and emergency images and its potential improvements to service appeared to have little or no influence on the departments included in this study.

Reporting, of course, is always reporting on 'something' and here our referent has mainly been A&E, to which we have also adverted in Chapter Five. More generally, reporting on plain films was identified as *'the next step'* for radiographers by a Senior 2 in Department C who felt that there should be national

guidelines and criteria, with information on its legal aspects and who was interested in being trained to report on general, appendicular and accident and emergency images, for which there was:

> *'not much scope for it at the moment. There is in other places it's just not here* [...] *if it ever does happen more senior people* [...] *like Mary and Jill who are the senior and superintendent for the general areas will get into that area before anyone else.'*

He attributed the tardiness in his Department on radiographer reporting to the unenthusiastic approach of radiologists, believing that the same situation existed in other departments in the area, although elsewhere *'they seem to be more advanced in that'*. However, plain film reporting by radiographers was not undertaken in any of the departments in this study and, though the manager of Department A identified three radiographers who were involved in it, at the time of interview two of them, as well as many other informants, stated that the scheme had yet to commence as radiology directorate support had been withdrawn The irony ought not to be lost on us that, until 1925, radiographers *were* reporting, until the culmination of the long running dispute between radiographers and radiologists over the division of labour forced the Society of Radiographers to change its relevant Article of Association so as to prevent its non-medical members from doing so (Price, 2001). Moreover, Bowman (1991) identified 1970 as the point when attempts were made to develop programmes which would expand the education and function of radiographers to those of radiologist assistant, only for an increase in the number of medical graduates selecting radiology to lessen the shortage so that fewer radiologist assistant programmes were developed and the concept was eventually lost, vestiges remaining in operating theatre where, in many hospitals, operating department practitioners act as surgical assistants. Price cited rapid advancement of technology, increased workloads, financial imperatives and the aspirations of many radiographers, together with the support of radiologists, as contributing to the re-emergence in recent decades of varying degrees of radiographer reporting.

During this period ultrasound reporting has been a long-standing activity and was being undertaken by radiographers in all of the departments included in the study. According to Superintendent 3, Department C, *'(I)n ultrasound we do a lot of reporting here and they're looking to expand that all the time.'* But it would appear that while, in Department C, reporting by ultrasonographers was an accepted practice, increased salary for it was not. Reward was based on individual competency and type of examination undertaken.

> *'we've given quite a few people a reporting allowance recently* [...] *reporting has always been part of ultrasound anyway, and we're just looking at ways we can expand that with various areas looking at competency based but that won't become part of the role of the ultrasonographers but based on competency as well because not everybody reports to the same level within ultrasound or reports or does the same type of examinations.* (Superintendent 3, Department C)

The Senior 1 radiographer in Department B, who worked single-handed in a specialised unit, reported on the ultrasound scans he performed with no radiologist present in the hospital, considering them to be *'normal'* since they were performed on patients returning on a yearly basis for follow up, saying:

> *'I think basically he* (the radiologist) *doesn't want to report on them himself. It's less work for him if I do them, I'm happy to do that but I'd like to do more so that's my next step'*

Being allowed to report was not always straightforwardly welcomed. A Senior 2 in Department A, possessing the Diploma in Medical Ultrasound, had been offered promotion to a Senior 1 position, including reporting but refused the offer since the consultant radiologist had decided, as a male radiographer, he would have been limited to undertaking prostate scanning. A similar situation had been experienced by a Senior 1 when radiologist support for her to undertake a mammography readers' course had been withdrawn, thereby restricting her scope of practice. At the same time, radiographers involved in barium enemas had yet to commence their

reporting course, while approval for mammography reporting and biopsy had been withdrawn by the consultant radiologist concerned.

Scope of practice, staff cohesion

Radiographers' practices were clearly varied and different. Departments required different skills to be exercised, reflecting the types of patients examined and the nature of the work, therefore, to be undertaken. The hierarchical distribution of posts also differed, as a function both of size and focus of departments. As there were more specialist radiographers in Department A, so there were also more at Senior 1 level and it was even possible to remain a clinical radiographer and gain a Superintendent 3 role in virtue of that expertise, rather than have it awarded, as was usual, because of the number of staff for whom the incumbent was responsible. Department A was also unusual for having one of its radiographers remaining exclusively in a general x-ray room, although qualified to undertake MRI and ultrasound. At interview it transpired that, in addition to a back injury which hindered him from working in other areas, he was dissatisfied with the degree of autonomy and the nature of the work that he claimed he had been permitted to undertake in these specialisms.

As the busiest and largest Department A also had a relatively high turnover of staff and always had vacancies. Neither of these circumstances did much to create convivial atmosphere. There was a visible hierarchy among staff and distinct cliques had developed, particularly since the transfer of staff from a nearby department which had been required to close. Generally staff appeared to be the least content. Team spirit appeared to be lacking and animosity between individuals and groups was apparent. The size of the department had resulted in many staff never having the opportunity to work together. Its manager was rarely able to make contact with staff, given its size and his involvement in trust committees and professional organisations. In contrast, in small, specialised Department B and medium sized, multi-service C, individuals were offered greater opportunity for rotation through available specialised areas, radiographers worked very much as teams and there was little turnover of staff, even though this resulted in limited

promotion opportunities. Differences in involvement of staff in the clinical education of student were also apparent. Informants in Department C, while not having in-depth knowledge of radiography education, were more involved in students' placement learning than their counterparts in Department A, participating in their assessment and taking an active interest in clinical training. Relatively fewer students spent time in Department B and, consequently, were better known to staff since no clinical tutor was assigned to this department, giving staff greater responsibility for ensuring that learning outcomes were achieved and evaluations and assessments undertaken.

In Department B 83% of radiographers performed non-radiographic duties assisting the radiologist. This was expected since neither radiography helpers nor nursing staff were employed to undertake such tasks. Among those interviewed, a Senior 2 of Department B was also unique in being responsible for the pharmaceuticals in her department. She had to order all drugs and contrast agents, keep records of those used, ensure that drugs were stored correctly and safely and return unused pharmaceuticals to the hospital pharmacy. This role was performed by nurses in Departments A and C. Along with other radiographers in the department, she also cannulated (gave intravenous injections) 'scrubbed up' and prepared sterile trolleys for procedures. In Departments A and C these and similar roles were also performed by nursing staff. At the same time, a Superintendent 3 in Department A felt that nursing duties should be expanded to encourage team working and make a *'better all round radiographer'*:

> *'I'm old school. I trained a long time ago when we didn't have nurses in the department* [...] *we did everything and I think that makes you a better all round radiographer.* [...] *I think that's why our department fails in that we've got loads of nurses* [...] *they don't have nurses at Hospital Z so any specialist procedures the radiographers have to know what to do'*

One might reasonably argue that if there is to be an increase in skill mix in imaging departments there may be a case for increasing the 'nursing' element of the radiography curriculum. However, skill mix in imaging departments appears to be

taking place in isolated sites, while role development *qua* specialisation activities are on the increase nationwide. Those reminiscing about nursing duties appeared to be dwelling on the past and on 'the way it was', reflecting upon a legacy dear to some long-qualified radiographers. But practices have changed and, as indicated in questionnaire responses in Appendix Six, radiographers' nursing activities tend to be minimal.

In Department A, even though 30 support workers and eleven nursing staff were employed, 77% of radiographer staff also assisted radiologists in a similar manner, echoing the demarcated and hierarchical nature of roles in this Department. In Department C, these duties were never performed by 40% of those interviewed and sometimes by a further 40%, though only 6 helpers and 4 nursing staff were employed. It can be assumed, therefore, that greater skill mix existed in Department C than in Department A, its team being prepared to perform whatever duties were required of them, hopefully to patient benefit.

Rotation and specialist skills

In order to create an adaptable workforce and to provide radiographers with a broad range of experience many departments have for some time aimed to operate a rotation of general radiographic staff through specialist areas, seeking to provide as many radiographers as possible with 'role development' activities. A problem tends to arise in larger departments where considerable time may elapse between opportunities to practice specialist skills if a large number of radiographers are involved. There is also a problem of maintaining standards in these circumstances. A common solution has been to deploy teams who rotate through specialist and general areas at staggered intervals. Unlike Departments B and C, the largest of our departments (Department A) chose to maintain appropriately skilled staff in specialist areas, thereby limiting role development opportunities available.

Intravenous injecting was undertaken by 55% of respondents, in one or more setting. Many radiography education centres now include injecting in their

undergraduate programmes, though mainly at the theoretical level, allowing practice only on artificial models as precursor to post-graduate, practical, departmental training. In the absence of direction from the Society of Radiographers and lack of a recognised qualification, radiography service managers organised their own intravenous injecting training and by the time that the Society of Radiographers had published their intravenous injecting course the departments in this study had devised their own in house training methods, awarding radiographers certificates of competence which, unfortunately, were not transferable between Trusts. While this seemed to be working adequately, a Superintendent 3 of Department A reported having to undertake the Society of Radiographers injecting course in order to report on barium enemas. The Superintendent 2 of the same department believed that, if radiographers were to carry out intravenous urography examinations (IVU) twice as many could be performed, since most of their time was spent looking for a radiologist to inject and check images. The radiographers then did *'unnecessary views because the radiologist doesn't know as much as the radiographer'*. Despite such obvious potential benefit to patients radiologists had prevented them from injecting intravenous urograms until a protocol had been established, though they were permitted to inject in other areas. According to their part time Senior radiographer 2:

> *'With training, I think injecting in IVU's would be useful. We could inject and then do the examination* [...] *we inject in other areas. They do in Gamma Camera but I'm not sure why we can't break into IVU's I'm not sure if it's the radiologists opposing it. Even on nights we have to call the radiologist in which...if somebody on nights had that skill then we wouldn't have to call them in. The radiographer could do the whole examination and it could be checked in the morning. It's only because there's a worry the patient might have a reaction to the contrast that they say they need somebody on hand but there's always somebody around in A&E who could help'.*

In Department C a variety of training methods had been used in the past, such as those for nurses and the ambulance service and for different types of needles. The training programme in use at the time of this study was undertaken by the

ambulance service, radiographers receiving instruction lasting approximately three hours. Subsequently, they practiced under the supervision of a suitably qualified radiographer already trained in intravenous injecting, being awarded the qualification when they had performed three procedures under such supervision and a radiologist considered them safe to practice. While this scheme was economical and easy to arrange, as with others, it still did not confer a transferable qualification and, at first, radiographers had to prove their competence annually. The current situation relied on radiographers' professionalism:

> *'We used to sign them off for a year but now we sign them off for life. Because nobody renewed them after a year. We felt that it's a professional competence and if they don't practice enough or if they don't feel confident then part of their professional role is to say "I need supervision for this".'* (Superintendent 3, Department C).

In Department A, however, radiographers' certificates in injecting remained valid for only two years and had to be renewed after that date, the Superintendent 3 of Department A commenting:

> *'The problem is* [...] *is having done it myself* [...] *is keeping up your practice but I think that certainly maybe you come out knowing you've done the theory and all you have to do is a refresher on the practicality of it* [...] *It's not quite riding a bike but I think I could still pick up a needle and put it in someone's arm successfully. I remember even when I was doing it, quite regularly you failed* [...] *so now I'd probably say 'I haven't done it for 2 years so find somebody else, you know' My chitty or paper is no longer valid so...'*

In Department B the weekly rotation meant there could be a gap of eight weeks between circumstances when a member of staff was able to use their injecting skills:

> *'We have a rotation through ultrasound* [...] *everything is competency based nowadays* [...] *we have competencies for CT and we're going to do that for ultrasound...as long as you've got people overseeing it and if they feel they*

can say look, I want a bit more, I want to try and get a bit more experience because at the end of the day they do a week at a time and by the time that week comes round again that's 7/8 weeks down the line that's almost 2 months. [...] *The first couple of days back in* (C.T.) *they're cannulating if you leave it any longer than that they should feel they could put their hands up and say "Look I need a bit more time and a bit more experience to get my hand back in." It's largely a confidence based thing* [...] *if you think you can get into that vein you can do it. If you can't feel anything-there you can always ask someone else.'*

The Superintendent 3 at Department A remarked that she had difficulty finding an injecting course on which to register since those available in the hospital were all heavily oversubscribed. Most of the radiographers in her department had undertaken their training in a phlebotomy department. The Senior 2 radiographer from Department C did ventflons and butterflies (types of needles) on a daily basis and considered that 75% of radiographers in his department injected, the Superintendent remarking that they were extremely enthusiastic to do so. However, with large numbers of radiographers being trained to inject intravenously, a problem of maintaining competence arose:

'With iv injections we have people clamouring [...] *lots and lots of people lining up saying Please can we do them' and we've been successful with that and the way we train people-again its an issue of the number of people and the areas they work and whether they can maintain competence as well. If you've got some sort of rotation and some sort of turnover of staff as well then most people get through there we've just recently trained another five or six'.*

Department B and C in general offered significantly more opportunity for staff to gain experience in all areas of diagnostic imaging since there was frequent rotation of staff through specialist areas. In contrast, in A, areas such as radionuclide imaging, ultrasound and MRI were operated by permanent staff, with no rotation of other radiographers, while the CT rotation was soon to be halted. Such staff

deployment strategies simply did not appear in the other departments. The influence of radiologists on the organisation and management of Department A was also greater than elsewhere. Continuity of staff and familiarity between radiologists and radiographers was not easy in this large department where rotation would have resulted in individual members of staff spending time in particular specialist areas approximately once every eighteen months, with the undesirable consequences noted above. In Department A the Superintendent of the radionuclide imaging suite embraced the concept of a rotation but the two radiographers permanently working with him were unable, for medical reasons, to work in other areas of the department where greater manual handling of patients was required. The ability of radiographers to maintain specialist skills is directly influenced by frequency of opportunity to practice. Size appeared simply to inhibit it in Department A

Such lack of rotation through specialist areas was an important consideration for staff when selecting their place of work. This study found that opportunity to gain experience in specialist areas varied greatly between departments and was least in Department A. Several staff had moved to Department B in order to be able to spend more time with patients, feeling that, in so doing, they provided a better service and where they were allowed one week out of every eight/nine for personal development, during which time they could read, study and reflect. One Senior 2 radiographer had left Department A which she described as *'a conveyor belt. There was never any time to spend with the patients'*. The Senior 1 and Senior 2 were just two of the radiographers in Department B who considered their roles (and that of their colleagues) to be quite different to radiographers in non-specialist departments:

> *'because of the type of patient we get here being a specialist centre...the patients are different. We don't have drunks coming in at 3 o'clock in the morning, or people with cut fingers...we generally have really poorly patients who come here who need time. Some of them are in a lot of pain and it's very difficult to move them. You do need patience* [...] *you do need that in other departments I know but it seems more here'* (Senior 2, Department B).

The psychological care of the patient was quite different 'people (patients) get very upset if there's a slightest glitch in their treatment plan or their results becoming available or their treatment options being discussed if the radiology is not available. A number of my colleagues feel that its more difficult working here because of the emotional attachment [...] *we see them* (patients) *more often* [...] *we see them deteriorate* [...] *and to some people that's emotionally quite difficult to deal with.* (Senior 1, Department B)

The specialist nature of the work, the patient types encountered, team working and the ability to work in every area made department B unique. The Senior 1 continued:

'We work in quite a small department as well, whereas bigger departments I suppose if there are confrontations with people you can always work in different areas whereas here you have to get on with everyone so I suppose that's a skill you need to learn. Again we covered every area here whereas in most hospitals you will either do CT or MR you don't tend to do both or you do mammography or whatever but here you have to be able to do everything and because there's such a small number of staff if people are off you have to be able to go into any of the rooms at any time. In one day you could be in CT and the next morning MR the next afternoon mammography [...] *everything. You just need to be able to change. Another thing we do here which other radiographers in other departments don't always do is that we consent patients. We consent patients for Hickman lines when they come down here. We go through on the legal form that the doctors fill out. We do have a separate form which we have to go through. We have to answer any questions that the patient might have. It's the same with cannulating; we go through forms and sort out different forms for letters to their GP's. It's hard to think what we do because you do it all the time.'*

Workloads in Department A inhibited patient care aspects of radiographers' roles, while in Departments B and C they seemed more able to talk to and communicate with patients, avoiding the 'conveyor belt' description referred to earlier. The Manager of Department B felt that a degree of counselling skills was required by

radiographers in her department. Similarly, staff in Department C was able to spend more time communicating with patients, a factor which, along with opportunity to gain experience in CT and MRI, had attracted at least one basic grade radiographer to it.

Developments in imaging and advancement in technology have largely shaped the radiography departments of today. Radiographers demonstrate extensive skills in undertaking basic, routine, complex, invasive and highly technical examinations. Historically there has been a need for them to specialise in areas, such as ultrasound, computed tomography, radio nuclide imaging and cardio vascular, as well as more general radiographic examinations, for example, mobile radiography and fluoroscopy. Some of these areas have required further qualifications (e.g. ultrasound and, more recently, mammography), while others, such as computed tomography and magnetic resonance imaging, require display specific expertise in effectively managing an area or room. Radiographers in these specialties are usually appointed at Senior one grade or above. Specialising has, therefore, been a way of gaining promotion and, as a result, has attracted radiographers away from general radiography where these grades are not as easily achieved. Effectively utilising these specialist skills tended to involve, at the same time, restriction of the remainder of their practice. The line between specialisation and 'role development' was, in the view of some, becoming blurred, raising the possibility that in future radiographers might be trained in specific areas of specialisation alone, a situation envisaged by a Senior 1 of Department B who felt that specialisation would result in a relatively inflexible work force, *'a large group of very individually skilled and specialist personnel that are not as interchangeable as we used to be.'*

This study clearly found, then, that opportunities to gain experience in specialisms varied between departments, Department A offering least opportunity for radiographers to broaden their experience, with no general rotation of staff through radionuclide imaging, ultrasound, computed tomography or magnetic resonance imaging rooms and a small group of radiographers working exclusively in cardiology and digital vascular imaging rooms. When asked if there was scope in

Department A for radiographers to expand their roles the Superintendent 3 responsible for the screening rooms replied:

> *'There's loads of things. If you think what's happening elsewhere in the country with radiographers doing barium meals, small bowel enemas...there's a GI* (gastro-intestinal) *whiz kid in Cornwall* [...] *certainly in my field there's a lot more we can do.*

The Manager of Department A contended that such change had occurred because radiologists no longer wanted to perform a particular task or skill, though due to lack of confidence not all radiographers were eager to expand their roles. Our evidence suggests that in practice there was little role development taking place. A part time Senior 2 in Department A felt comfortable reporting on accident and emergency images, which she regarded as *'easier'* but was *'unsure'* about reporting on mammography images commenting *'I think it's the fear of the unknown.'* Similarly, the new graduate working in Department A had a limited view of those she could perform, based on current practices in her place of work:

> *'I'd like to do things that make my job easier. Like injecting. A lot of the time we're hanging around waiting for people to inject. If I could just do it myself then it would be easier. I'm not that keen on reporting at the moment because that really isn't part of our job and I've just started. I haven't been qualified that long. I'm not too sure about enemas* [...] *I've just qualified and I think it's too early on. I think barium stuff I'd like to do because I enjoy it but I can't see myself doing things like angiography* [...] *I just don't enjoy it.'*

However, she did not consider her enthusiasm to extend her role to be embraced by radiographers qualified *'a long time.'* She believed some of the older radiographers to be *'stuck in their ways'*:

> *'They are not as broad minded as the younger, newly qualified people. The older radiographers tend to say "This is the way it is done and this is the way it's staying." Whereas we're sort of like we'll try a bit of everything.'*

A Senior 1 in Department A recognised that a role development activity, such as reporting was not something all radiographers would wish to engage in or would be suited to:

> *'I don't think reporting is for everybody* [...] *you do have to be a certain type of person, we've had experience in the past of people trying to do it and not really fitting in doing it and giving up. You've got to be of certain* [...] *your mind has to work in a certain way. I don't know if I'll want to do reporting if* [...] *3 months into it* [...] *I look at it and say "Whilst I've always wanted to do it with retrospect I'm just no good at it" or "It just doesn't suit me. I'm worrying about it too much" or whatever. Who knows? So I think the role has to be right...the person has to be right for the role and the role has to be right for the profession.'*

There was evidence to support her viewpoint since there not only seemed to be some reluctance by some established radiographers to embrace new ways of working, such as reporting (for example by the part time Senior 2 in Department A, see below) but prejudice against those who questioned accepted practice, as identified by the manager of Department A, who also displayed her own prejudices:

> *'Older radiographers* [...] *those that have been qualified for a while* [...] *I really don't want to say this* [...] *but is there any point in them wasting time to go on courses to do enemas if they are only going to be working for what 10 years or so? There's no point in them being trained up to do enemas, if I can be trained up and work for say 40 or more years.'*

Financially, her argument might have been sound, though there was no guarantee that a younger radiographer would stay working in a department long enough for any post graduate training to be cost effective. Furthermore, a radiographer who had been qualified for a considerable time would possess experiences that enhanced participation in role development activities. Difference of opinion between management and clinical staff existed, then, in Department A where clinical

radiographic staff demonstrated support for their role development but the manager was less enthusiastic.

Like Department A, Departments B and C certainly had a specialist radiographer(s) who remained in CT. However, unlike Department A, they also had a rotation of radiographers through the scanning room which enabled more to vary their work, not only making it more interesting but enabling them to gain further insight and expertise. In Department A CT trained radiographers did rotate but the rotation was restricted to a small group. Their Superintendent 2 stated that because it took a long time for one person to return to the CT room there were plans to change this arrangement and not have such a rotation, making it impossible for the vast majority of radiographers to gain experience in this specialist area. In Department C, Magnetic Resonance Imaging was the only room affording no rotation but there were developments taking place to address this issue. This was confirmed by a Senior, who commented:

> *'the only place we don't go through very often is MRI because it is a closed area* [...] *there are plans to start more people going through but basically we go through everywhere else. Yes definitely every area'.*

The opportunity to work in MRI was not available to all, as reported by a radiographer in Department A, who wanted to be trained in it but admitted that *'I know for a fact I wouldn't get in there'.* Another made the comment that for approximately ten years she had shown an interest in MRI and had been unsuccessful in being given the opportunity to train. Commenting on the situation in Department A, she said that '*everyone wants to go and specialise and there's just too many staff in the areas that they want to go in to'.* This had not always been the case, the Manager of Department A reporting that ultrasound had only recently recovered its popularity as a modality in which radiographers wanted to specialise. For the last three or four years radiographers had been requesting to specialise in MRI or CT.

In Department B radiographers' enthusiasm for role development was recognised by the Manager who was also a clinical superintendent and very much a part of the radiographic workforce. There was no difference of opinion regarding role development between management and clinical staff and lines of communication were superior to those in the other departments. The Manager of Department B recognised that the context of her department was quite different to that in District General Hospital Departments:

> *'I think specialising is going to be the be all and end all of their* (radiographers') *career. You see here there's not as much of that here as there is in a DGH. In some DGH's they have specialist teams running CT and MR and some radiographers don't get through there and I think that's really sad because students come into the profession they do things like MR and CT as part of their training and they can't do it when they qualify and I know that quite a few of the girls we've had here have come here specifically because they can't get into specials in DGH's. Places must be losing staff because of that. I appreciate in a big department it is more difficult but they have got to try and find a way round it so that the radiographers can get to know what they want to do. I think the radiographers do want to specialise more these days and I don't think that's going to change. I think it's evolved and think that's going to carry on. I think that's what some people have come into radiography to do, to specialise in one area especially with the possibility of getting more money for specialising but I think there going to be disappointed because there aren't going to be many consultant practitioners* [...] *they're going to be very few.'*

She accepted that, in order to gain promotion, radiographers must specialise; those with specialist skills tending to be on higher grades than their counterparts in general radiography. Those doing so would be more likely to be appointed as consultant practitioners, although advertisements for these posts had not specified that specialist clinical skills were required but, rather, that recipients were to be experts in their field, have leadership qualities and undertake research in order to promote evidence based practice. Salaries would be determined by the specific

policies that flowed from *Agenda for Change*. She was content that radiographers working in her department, unlike those in larger district general hospitals, were able to work in all areas:

> *'In a specialist place like this I do have reservations about people working in absolute specialist areas because it wouldn't work here because I need my staff to be able to work in other areas so someone who could only work in MR (*MRI*) or CT wouldn't work here. That could be the problem in a lot of places. Everywhere it's not a DGH. I suppose it depends what kind of department. You've got loads of people you can move around. If you've got more specialists then you've got less choice of people who can do other things-work in other areas.'*

A Senior 2 in Department C, attractive to radiographers looking for wide experience, had a similar outlook on the situation:

> *'In Department W* (previous place of work) *everybody rotated everywhere with the exception of ultrasound. It seems to be now that seniors are staying more in their areas rather than be rotated around the department. There is less staff being trained in each area. Whereas everyone rotated through CT it's being kept to five or six people.*

Larger departments would have more flexibility in the deployment of the workforce; even though there might be many radiographers specialising there were still sufficient numbers able to adequately cover other areas. Superintendent 2 in Department A considered that radiographers were specialising because *'they've gone as far as they can'*, in general radiography:

> *'There are not that many courses or opportunities for development in general radiography really* [...] *they want promotion, they want to do something else but also the fact that the opportunities are more limited in the general department really. They will get promoted easier if they specialise.'*

Superintendent 3 of Department B was aware that there were still some departments where radiographers would not rotate through specialist areas:

> *'We've had numerous applicants for jobs from people who say they really want to come here to work because they'll have a chance to do mammography, CT, MR whatever, screening stuff because in other departments they can only rotate around doing general work. Specials is* [...] *it's a very elitist thing and they are conscious that their c.v.'s are looking very bare. I think they've got to have a smattering of everything.'*

Peterson (1995) had voiced similar concerns, feeling that higher status and salary awarded to 'special' imaging practitioners seemed to diminish the role of diagnostic radiographers, claiming that this 'upward mobility', as he called it, had forced many of the best away from diagnostic radiography even when they enjoyed or preferred it. The Manager of Department C had attempted to address this problem by rotating as many staff as possible through specialist areas:

> *'That's part of the thing I've pushed since I've been here, is to get a rotation through the modalities we've got a lot of nice kit* [...] *we've a got a lot of interesting things that we do in the Department And I think people should be exposed to them so in a similar way'.*

In contrast, in Department A, seemingly attractive to newly qualified radiographers looking to gain experience in a wide range of examinations, before leaving to gain experience in specialist techniques for a few years post qualification, significantly less was offered. A Senior 2 of Department A felt this engendered a shortage of experienced radiographers in the general department and, echoing the 'normality' of such a pattern, the Superintendent 3 of the same department reported:

> *'There are three (radiographers) going into ultrasound, two going into CT and two are going to Hospital Z* (another hospital in the same trust) *on a rotation. It's taken a big chunk out of the general department. The specialist areas have drawn from the general department. The ones in CT will be training up*

and will come back out again and they will then be part of a core that rotates through there. The ones in ultrasound I presume once they're trained will stay in ultrasound.'

According to a Senior 2 in Department A, such behaviour was mainly for promotion, with its added financial rewards:

'I think its promotion. Obviously there is an element of wanting to work in these areas because they are interested in them but it's the only way they're going to progress because there's no progression within the general department here. With the exception of promotion to Senior 2 there's only one Senior 1 in general [...] *I think most people would stay* (in general) *but at the moment they don't see any incentive to stay in general when they can move to a specialist area and get senior 1 straight away. They can go from a basic radiographer to a senior 1 in a few years if they specialise.'*

Yet, promotion to Senior 1 had been insufficient inducement in persuading him to specialise, refusing a post in ultrasound because of the nature of the work. Similarly, he had asked to move out of MRI as he considered the on-call commitments to be excessive. Presumably, he would have concurred with Stelmach (2002), that expert skills demonstrated by radiographers in general radiography, particularly skeletal imaging, were undervalued.

In Department C the reluctance of radiographers to enter areas of specialisation became an issue when it proved difficult to recruit a radiographer to train in ultrasound. Its superintendent noted that, in his department, those in general radiography were now being recognised for their expertise and did not necessarily have to specialise in order to achieve promotion. This was unique among the departments involved in this study:

'I don't know [...] *whether they don't want the responsibility of ultrasound* [...] *its fairly onerous, I know the diploma in ultrasound isn't easy* [...] *so there's the commitment to do that* [...] *there's obviously a change in role and*

there's a fair amount of responsibility like giving bad news goes with the job...so the job is different. Perhaps people don't want to give up their areas of the department they are in now...we've always got a bit of a dilemma in the department...because of the way things are structured at the moment nobody recognises general radiography either. We have in a way...we have put in a Super IV and a Senior 2 in the general area that weren't there before but generally to get on you had to go into a speciality and that drives people away from general radiography. If that's what they are enjoying, that's what they want to do then why shouldn't they stay there? But at the same time we need people to do specialised roles as well'.

The manager of Department A felt that in smaller departments some of the examinations regarded as 'special' were regarded as routine in the large teaching hospital. He believed a Senior 2 radiographer in his larger department who might be performing specialist skills would be graded as Senior 1 in smaller departments. Additionally he explained that many of the examinations being performed routinely by his staff and considered as natural advancements of radiographers' roles were seen as significant role development issues in others. However, there was little or no evidence to support his theory.

Selection for Specialisation

In Departments A and C selection for the opportunity to work in specialist areas was an issue. A Superintendent 3 described how radiographers were usually selected to be trained in specialist techniques within Department A, claiming that: '*(G)enerally a notice goes up asking who is interested in doing what and then the superintendent and the managers discuss who they think is best suited'.* However the Manager of the same department described the selection process differently, explaining that superintendents provided him with feedback following staff appraisal enabling him to make an informed choice. The situation appears to have evolved over the years, a part time Senior 2 radiographer recalling how she became involved in mammography. Radiographers at that time were allowed to select one specialty and she had selected mammography, as opposed to the only other option available

at the time, ultrasound, as *'I thought that was what I could do best'*. The current situation allowed radiographers to select to be trained in any specialty although they might have to wait some considerable time before an opportunity arose in their chosen area. Having selecting to be trained in the specialty of mammography, she was permitted to work on a part time basis and was promoted to a Senior 2 grade although, until recently, all part time radiographers had been employed on the radiographer grade only. Managers, it was claimed, had realised that, in order to maintain staff, part time radiographers had to be receive recognition of their skills.

In Department C the Superintendent 3 radiographer explained that the selection of radiographers to specialise in areas, such as MRI or CT was not based on length of service but competence in general radiography and enthusiasm for the particular specialty:

> *'We don't progress people on their length of service which is a bit of an issue* [...] *I think it's only an issue for the first 2 years* [...] *I wouldn't say there's a hierarchy that says after 5 years you do this 4 years you do this 3 years you do this. I think the first 18 months, if anything, all I'm looking for is someone banging the numbers through and getting competent in the department* [...] *I think there's a mini hierarchy in terms of experience initially just because we don't particularly want to put people out into specialised areas when we don't feel they are fully competent working in general areas of the department.'*

Experience was considered important by Price et al. (1997) in arguing that radiographers needed time to consolidate their knowledge of basic techniques, after which they could learn about specialisms. The optimum time would depend on aptitude and enthusiasm of the individual concerned. In other words, this post qualification period was seen more as a consolidation of general radiography, during which radiographers might have experience of all the specialisms before deciding on one of them, rather than a preparation prior to learning about them. This would enable informed decisions to be made of the sort that appeared not to be taking place in Department A, given lack of rotation through specialised areas.

Enthusiasm appeared to be the driving force for specialist training selection In Department C, according to its Superintendent 3:

> *'What I would want is somebody who is interested and is looking to do the right things and wants to do things and although we said experience counts for a little bit the main thing as far as I'm concerned is putting anybody into an area of interest...if somebody is interested and keeps coming and knocking on my door'.*

The Manager of the same department raised concerns regarding the enthusiasm of staff to train:

> *'We have a fairly lethargic workforce...we push them to train...they are not knocking on our doors* [...] *we have to push people into roles. We have had a couple of people who have said "I'd like to do MRI", we've had two people who have come with a piece of paper saying "I'd like to do this", but that is quite rare. More often than not we get people moving on because they are changing their roles. We've got people who've moved to superintendent (positions) moved to other hospitals, from places like enemas or moved into CT. More often than not we're sticking up a note in the staff room saying that we are seeking people to train and asking them to put in a c.v. and we'll have a chat but even for something like ultrasound or our last training place in ultrasound we only had one person who was interested in doing it which amazed me...It's been similar in other areas. We have had limited people who have wanted to do other things'*

This Manager was unsure why radiographers were reluctant to develop their roles, acknowledging that there were those who were ambitious but commenting *'perhaps they're not as ambitious as I was'*. He did consider that perhaps it was not necessarily something specific to radiography but related to radiographers' expectations of what their lives should be like:

'It could be [...] *perhaps life has changed. It's similar to on-call* [...] *whether the basic pay is better, which it is but it hasn't changed enormously* [...] *perhaps people are different now, the quality of life is different. They don't want to come in and do 100 hours a week, they want their home life as well, they want to be out with their mates as well* [...] *I don't know".*

It is possible, as this manager suggested, that the responsibility and stress associated with change were not attractive to staff who are satisfied with the skills and jobs that they have already acquired. The benefits of increased leisure time were more appealing to many than additional salary earned with out of hours work.

Management Roles

None of the managers of the Departments in the study undertook clinical radiography although all were qualified. Those in Departments A and C also had responsibility for other departments situated several miles away. When describing her own role the Manager of Department B felt that her work was a bit different because of the specialist nature of her department. The fact was that *'the radiographer's job is different because of the special skills required to deal with terminally ill patients'*. The organisation, workload management, procedures conducted and after care provided in Department B all differed from those in the others considered in this study. Patients required more time per examination which took longer to perform on average than those on non-terminally ill patients. Given the nature of their illnesses patients attended regularly rather than for single episodes, as in general departments. Respondents strongly identified patience and empathy as skills required of staff (Appendix Six). They developed rapport with patients and required psychological support more frequently than their counterparts in Departments A and C. A considerable amount of Department B Manager's time was taken up with various committee meetings and she valued the excellent support from her Superintendent 3 which made this possible. While not undertaking clinical radiography, she was still very involved in the day-to-day running of the department.

The Manager of Department C felt that it was important to have had wide clinical background before entering management. He felt that such wealth of experience was vital for, *'if you specialise too early on then you're promoted because of your limited expertise and not because you're a good all round radiographer.'* He had experience of radiography departments whose managers were not radiographers and, therefore, were not in a position to manage that area *'properly.'*

While the Superintendent 2 of Department A had always appreciated that management routes were inevitable in gaining promotion, she had felt unprepared for her role. Her management degree was *'not particularly useful'* for the work that she performed. Having no clinical responsibility was something that she had *'got used to'* and she did enjoy her job which included quality assurance and health and safety. As far as clinical radiography was concerned she considered herself *'rusty in certain areas'*. In Departments B and C the Superintendent 3s had management roles similar to hers, reflecting their size difference. Superintendent 3 radiographers in Department A were practising clinical radiography, except for the information technology specialist who claimed that his role *'focussed on the use of information technology to improve the service and to make best use of resources' and* was quite different to those in other trusts although, as he stated, *'the role is appearing in more trusts'*. He was usually involved in several projects at the same time with the aim of improving practices, examining patient pathways, being proactive in determining what could be done better and using information technology infrastructure differently. He was required to report on RadIS (Radiology Information Systems) results and deal with general breakdowns and other aspects of information technology. His latest focus was on tenders submitted for the new picture archive and communication systems (PACS). In some areas a role similar to his was divided between two staff members; one who dealt with PACS and one who dealt with radiology service information systems. He believed that splitting the role between two people in such a manner wasted resources and a more robust arrangement would be to employ two people to share both. He explained that each of the UK countries had different staffing arrangements for PACS and RADIS. In order to be a good PACS manager he felt it essential to have a background in radiography or

radiography management of radiology information systems and the working practices of a department. He considered the specialist knowledge of information technology and networking available at Trust level to be sufficient for providing PACS managers with advice. He undertook no radiography except at nights and weekends, as part of the on call rota. He participated in out of hours cover not for financial gain but too keep his clinical skills up to date. Given that his radiography training was unimportant in his current role and shortage in the radiography workforce, it could reasonably be seen to have been more prudent to use his radiographic skills to their maximum, employing an IT specialist in his current post. The use of computerised systems in imaging departments is relatively new, though well established and on the increase, with image manipulation featuring as a daily activity by 35 (92%) of our clinical radiographers. Though over half (63%) had been qualified over 10 years, skills were not cited as lacking in their own pre-registration training. Computers have become a part of everyday life and the skills required to deal with digital data, images and patient records are learned outside imaging departments and considered normal, rather than unusual.

Difference in the size of the departments seemed, then, to be related to differences in the responsibilities of Managers and Superintendents. In Department A Superintendent 3 radiographers were in charge of specialist areas, such as Accident and Emergency Imaging Department, CT and nuclear medicine while, in the other two, these were run by Senior 1 radiographers. The Superintendent 3 radiographers in Departments B and C were both managers with no clinical input. The Manager in Department A was distanced from the day-to-day running of the department where staff numbers and workload were significantly higher than in others. Contrary to his questionnaire response, he divulged at interview that he participated in the out of hours rota in order to maintain his clinical skills thereby undertaking more clinical radiography than the other managers. This involvement had cost implications for the Department, its payment based on his normal hourly rate and constituting a reason why other managers were prevented from participating in such cover. In Department B, involving smaller numbers of staff and throughput, the Manager, while not actively involved in the organisation of the department, was still very much involved in its day-to-day operation. Similarly the

manager of Department C was aware of operational issues and the needs of individuals in his department. He alone among the managers did not regard himself as a clinical radiographer. All relied greatly on their Superintendents. The Superintendent 3 of Department C also undertook no clinical radiography, explaining that the radiography services manager was responsible for strategic direction and management, while he was accountable for day-to-day management of the department.

Doing research

A Senior 2 of Department B recognised that if radiography was going to *'advance as a profession'* more research needed to be done:

> *'I know several areas that we need to expand* [...] *I mean with CHI and everything you're always being asked to audit if not do another research study and I think if you've done a degree then you're obviously able to do it'*

When asked to expand on 'advance' she explained:

> *'I mean if we are to be taken seriously* [...] *if we want the radiologists and other medics to believe that we can do more, like advanced practitioners then we have to show that we have got more to offer. We need to show that we can develop new techniques or that we can produce images in a better or different way but the trouble is none of us are doing it because the culture just isn't there. We are too busy just trying to do our present job as best we can and we don't have the time or opportunity to try something different'.*

She was perceptive in recognising that for radiography to be 'taken seriously' radiologists and other medics would not only have to believe that radiographers *'can do more, like advanced practitioners'* but radiographers would have to show that they had more to offer.

No radiographers participating in this study were currently undertaking research though a few had previously done so. The Manager of Department C considered the hospital where his Department was based to be a *'fairly basic district General Hospital'*. He felt that if it were attached to an academic institution or a teaching hospital staff might be more involved in research. However, no more research was taking place in Department A, which was so situated. The majority of managers (67%) regarded themselves as researchers, yet only 33% had been or were involved with it in any form. Consultant posts gradually being introduced for radiographers require them to be research active. Many of the responsibilities associated with consultant radiographers are identical to those currently undertaken by radiography managers and it is possible that some consultants will be drawn from the current radiography manager workforce who will be required to become research active. However, given their vestigial current involvement in research it must be questioned whether they would have the skills and motivation to do so effectively.

The four tier system

Prospecting change

If knowledge is the lifeblood of professional groups and control of it central to their power and status, it is reasonable to argue that radiographers have only tenuous hold on certain aspects of what would count as a strong claim to be more than specialist workers, dominated by others. Part of their condition is shared generally by those in predominantly public sector employment. Certainly, in the UK they work for a State for which target setting, performance measurement and labour flexiblisation appear to have become more important than the virtues of professional autonomy and self-determination. This dominant note in public policy has been characterised by Ball (2004) in respect of education as being an emphasis on 'performativity'. It is as evident in its impact on speech therapists and dentists as it is among teachers, nurses or radiographers. One of its common manifestations is reform of occupational hierarchies so as to simultaneously 'open them up' to specialised and, in traditional terms, only partially trained, incomers at what is

generally regarded as the 'bottom' and to redefine their most talented practitioners as having the right to share in the business of those hitherto 'above' them. This is frequently justified in terms of the language of 'skill-mix' which may be regarded as being driven partly by neo-liberal distaste for what is regarded as self-protective producer interests and by changing technological conditions and opportunities. We should remember that, in the context of occupations, 'technology' should be regarded not simply as things that plug in to the power supply but, much more broadly, as 'how the work is done' (Perrow, 1967) While it may rest, in the final analysis, on the characteristics of the raw materials, products, markets and available techniques to hand, technology in this sense is also deeply cultural. For example, in teaching, either we may regard students as *tabula rasa*, upon which facts, ideas – competencies – are to be impressed or as constructing learners for whom knowing and doing are seen to be in a relation of open possibility. Such contrasting views of the objects of pedagogic discourse, writ large in the consciousnesses of teachers and pedagogic practice, have finite knowledge bases in psychological and sociological terms (Bernstein, 1996) but they tend to be only very lightly technologised (Davies, 1973; Davies, 1994: Fitz, Davies and Evans, 2005). Much of what we cherish in teaching, as in health care, depends a good deal less on evidence than on belief and convention, itself part of the justification for why we wish to entrust them to 'professionals'.

A second manifestation and concomitant of performativity is seen to be a heightened 'need to manage'. Like skill-mix claims, this always stands open to the suspicion that much of it may amount to no more than an ambition to cut costs while simultaneously enhancing control over employees who are to be shaped and 'developed' on criteria that have more to do with managerially privileged objectives than anything else. The 'modernisation' of the NHS, while one should guard against being too insular with respect to tendencies worldwide in advanced healthcare systems, is also somewhat unique to the British case and, within it, *Agenda for Change* had set the terms for recent debate with respect of our respondents' interests. At the point of my contact with them, it constituted prospect rather than actuality, part of its core a four tier reorganisation of radiographer grades undergoing trialling and under early adoption elsewhere. As we spelled out in Chapter Three,

the aim of what was referred to as 'the skill mix project' was to redesign clinical teams by skills and experience' rather than profession. The four tiers identified by the Department of Health (2003a) with respect of the radiography service were Assistant Practitioner, Practitioner, Advanced Practitioner and Consultant Practitioner.

At interview, managers and recent graduates revealed good understanding of the four tier structure while the majority of practising radiographers seemed less sure of its purpose or potential impact, several having no knowledge of it. Some needed further explanation of what was being proposed before they could respond to questions as to how they viewed it. The responses of most informants focussed on advanced and assistant practitioner grades almost certainly because these were the more easily identifiable and likely to have most impact on their practice. Those interviewed were accustomed to the value and responsibility attached to the grades, as defined by the Whitley Council which had been in operation since 1956 (see Chapter Three). The replacement of this system by a single NHS pay spine under *Agenda for Change,* coinciding with the introduction of the four tier structure, had caused confusion amongst radiographers throughout the country as to the objectives of each. It became evident that interviewees incorrectly believed that the titles identified by the four tier structure would automatically place them on a specific *Agenda for Change* band, regardless of their job description

While the introduction of the four tiers was still in its early stages during this study, radiographers and even more so their managers were already sceptical about its impact. In general they believed that the aims of such a skill-mix project were unlikely to be met, given existing lack of evidence as to implementation. They reflected that it had been met with opposition, particularly from radiologists, despite the guidance provided by medical professional bodies. The Royal College of General Practitioners (1993) had earlier pronounced that the benefits of delegation should be achieved without exposing patients to unreasonable risk. A framework for delegation by radiologists to either medically qualified or non-medically qualified was further identified by the Royal College of Radiologists (1993a) which differentiated between 'proper delegation', when tasks were within the training experience and

skill of those persons to whom to whom they had been delegated and 'improper' where they was not. Reference to delegation had also been made in the Royal College of Radiologists' (1993c) discussion of skill-mix in the *Staffing and Standards Report* where it was recognised that radiographers' roles could be extended to undertake what were described as traditionally medical tasks. Additionally, the General Medical Council (1998) had recognised the importance of clinical teams and changing relationships between doctors and other professional healthcare staff. Interviewees reported that radiologists were still unwilling to relinquish or delegate some of their tasks, so that implementation of the four tiers appeared to lie in the distant future. Fear of blurring professional boundaries, accompanied by loss of status, authority and power were held to lie behind such reluctance. Radiologists were being protective of professional identity, feared litigation in the event of radiographers making incorrect or improper judgments and harboured concern for patient safety, for which they were ultimately responsible. Interviewees in Department A claimed to have experienced strongest opposition from radiologists, citing an individual who was defined as the main hindrance to their 'role development'. Its radiography services manager did not appear reluctant about change, identifying areas where radiographers' roles were developing despite radiologist obstruction. However, these were not confirmed by his staff who hinted that he attempted to protect his own position in saying so while not advocating change in strategic planning and policy circles as strongly as he would have liked his staff to believe. He indicated that appointment of consultant radiographers would obviate the need for much of his current role activities. In the other two departments, opposition was reported to be less formidable, with some support perceived and evident, although change was occurring at a slower rate than what was believed to be the case than in England.

Employment of assistant practitioners, designed to facilitate expansion of radiographers' roles, appeared to be a secondary issue. In an atypical response, the Senior 1 in Department B displayed what might be regarded as a broad perspective on the practical implication of the four tier system in claiming to appreciate that, while the *'party line'* required it to be regarded as a positive move, enabling radiographers to undertake tasks that radiologists were prepare to

relinquish, radiographers could '*drop or dump stuff*' on to assistant practitioners. One of the 'principles' of the four tier model was that it should be implemented as a whole and not as single tiers. (Department of Health, 2003a). However, this was not evident in the departments included this study or in the rest Wales, in contrast to what was known to be happening in Leeds, Manchester and London. Only two of the four tiers were in place. No one at assistant practitioner grade had been appointed in the departments participating in the study and, while radiographers in them were undertaking barium studies and ultrasound reporting, skills defined by the Department of Health (2003a: 17) as those of advanced practitioners, no consultant practitioners had been identified and no appointments were envisaged in the near future. In such a context, at such apparent odds with official intentions and not unique to Wales, it was hardly surprising that radiographers, radiologists and oncologists all sought reassurance from the Department of Health (ibid) that the four tier model would not dilute professional standards and scope. At the same time, the Department of Health was reporting that staff employed in pilot sites believed that the status of radiographers would improve and their expertise be better utilised.

Our interviewees were not inclined to these conclusions and were wary of the advantages of the prospective structure, being sceptical about implementation of the career progression framework by the Department of Health upon which the four tiers were predicated. A history of attempting to cut down on expenditure by the NHS had left at least some of its staff cynical about innovation. The Superintendent 3 of Department A considered that cost cutting had driven plans for the four tier structure since increasing demand for services had led to the realisation that it was not possible to pay everyone involved in their delivery at historic professional rates, hence the introduction of the assistant practitioner tier. His concern was that *Agenda for Change* would encourage radiographers to work according to the pay band in which they found themselves rather than to job descriptions, putting patients at risk if they worked beyond their recognised scope of practice expertise. He compared Senior 1s working with sonographers, where the current system allowed both groups to be appointed the same grade. Sonographers might become reclassified as advanced practitioners while their skills, specifically in reporting, were recognised to be at a higher level than specialist Senior 1s. For this reason he felt it more

appropriate that reporting sonographers should be redesignated as consultants, failing to appreciate that, under the new arrangements, consultant radiographers would be appointed only if capable of satisfying the criteria laid down (see below) as part of a job description.

A Senior 2 in Department B felt that the different grades could be '*accommodated*' but had concerns over the usefulness of assistants and apparent limitations on the roles of advanced practitioners, while also being unsure about consultants. Of the latter, he thought:

> *'their role is specialised so maybe they would fit in but I'm not sure. Our radiologists would have to move over a bit for that one I think. With the assistants if we've got to supervise them then I can't see what real use they would be.'*

Failure to appreciate that assistant practitioners were to be a new grade and were not radiography helpers was evident.

There was clearly considerable confusion regarding the four tier structure and its levels, such that difficulty and non-compliance with its implementation were held to be expected until radiographers were well informed of its intention and detail. Perhaps due to inexperience and not having had time to become indoctrinated by the scepticism of colleagues, the recent graduate in Department A was uncharacteristically optimistic not only about the likely success of the four tier structure but in believing it was already largely in place:

> *'I can't see a reason for it not to work. In a way we're having it now but without the consultant practitioners. The assistants are nearly here. We're the practitioners. The people doing ultrasound and reporting the like are the advanced practitioners and the consultants* [...] *well I think it's in the air with them at the moment but I can see them coming in* [...] *they'll do the research and stuff'*.

Lack of commitment to drive this initiative forward was evident from her manager who thought that it would result in radiographers staying in more lucrative clinical areas where specific skills would be rewarded, rather than entering educational, superintendent or managerial roles, negatively affecting the profession as a whole and radiographers of the future. His experience of educational and managerial tasks had made him aware of the added responsibilities each entailed, including the necessity to undertake work at home during the evenings and weekends. He was concerned that radiography education departments were already finding it difficult to recruit staff, as lecturers earned less than most diagnostic clinical radiographers receiving additional payment for on call duties. He felt that superintendent radiographers and radiography lecturers were going to be neglected to the benefit of advanced and consultant practitioners:

> *'Radiographers will migrate to the areas they think will be going to best reflect their kudos, their responsibility, financial reward and interest. That has been traditionally taking up a senior post, defined as a superintendent* [...] *a manager* [...] *or an educator. Both of those would appear to be the professions lost to the clinical field which I object to* [...] *they don't seem to have thought about this group. I think people will stop going in those areas if they see it financially advantageous and professionally more rewarding to do a job that really still will only function at 9-5. It won't really be running with people taking mountains of work home where they won't have to deal with complaints and staff issues and the maintenance of facilities etc and probably earn more than a superintendent.*

While he believed that superintendents and radiography lecturers would move to consultant practitioner posts leaving *'inferior, lesser skilled, less able group'* to manage and educate the radiographic workforce, his Superintendent 2 described the changes as *'good'*, considering it to be a way of rewarding radiographers' skills, permitting them to gain promotion without having to become managers. At the same time she did concur that the four tier structure and *Agenda for Change* constituted a threat to radiography managers since its emphasis was on rewarding clinical skills:

'if management side of it don't get what they think is a fair deal I think people could leave. I've heard Bill (the manager) *say that he would consider his position if he doesn't get what he thinks is right for his responsibilities. So I think that could suffer'.*

It appeared to many that new structure was not going to be universally appropriate for all departments. The Senior 2 in Department B argued that because none of its work was *'straight forward* [...] *we do chest x-rays but most of our work is in a specialty which is why we are Senior 2s and above here',* there was no role for assistant practitioners in such a department. However, his Manager and that of Department C, unlike their counterpart in Department A, believed the move to a four tier structure to be positive for the radiographic workforce

Consultant Practitioners

At the time when interviews were undertaken (and, indeed, in mid-2005, at the time of writing) no consultant radiographers had been employed in Wales. The Senior 2 in Department A felt that there was no need for them, believing they had only been introduced as there were insufficient numbers of qualified radiographers for existing vacancies and that consultants would be recruited from other professions. He did not appreciate that consultant posts were to be aimed at radiographers who were regarded as experts in their field, capable of taking management and leadership roles.

'I suppose there is a place but why are they there in the first place? I mean we should have enough [...] *if we have had enough people in our profession at the start of this* [...] *without them shortening down on the numbers we could choose from then there wouldn't need a role for these then would we because we'd be filling the roles our selves.'*

However, given *'the politics'* of radiologists' support, the Manager of Department A did not envisage that consultant radiographer posts would be created in his department. The Superintendent 3 of Department C held a similar opinion, believing

that if consultants were appointed they would only be in *'ones or twos around the country'* and that *'(I)t's never going to be this big issue that people are trying to make of it* [...] *saying we are going to have consultant radiographers because generally we're not.* There was no scope for them in Department C or most other departments and resistance should be anticipated from radiologists. They would perform tasks presently in the domain of superintendents and managers, such as strategic planning and others which radiologists no longer found attractive and whose loss enabled them to progress to more interesting investigations and interventions. The Manager of Department A appeared sceptical of consultant radiographers:

> *We thought consultants were going to be strategic planning, clinical development etc. Well, from my point of view that's what I do* [...] *so the consultant will either be a short-lived, hopefully not, but a short lived firefly in the night or will have a long, long time establishing their credibility.*

He felt there would be resistance, particularly from newly appointed consultant radiologists, of a similar kind to that displayed toward assistant practitioners by *'junior novice radiographers'.* While he supported their appointment, many of the specific, discrete skills performed by those appointed outside of Wales were already being undertaken by practising radiographers:

> *'the insertion of central venous lines which is 'one facet and function of another person's role and to call them a consultant based on that, I think, is very naïve* [...] *We're doing things here which are being done in other departments and they are creating huge hoo-has about. We see it as a natural advancement of the radiographer and probably will develop eventually into something like that but we're not going down that road at the moment'.*

Unfortunately he was neither able to state where the appointments to which he referred had been made, nor could not identify the *'other departments'* where the same skills, regarded as routine in his department, such as ultrasound reporting and

barium enema examinations were regarded as substantial additions to radiographers' roles. What was clear was that those skills which he was citing were the remit of advanced practitioners, not consultant radiographers as defined by the Department of Health (2003a:11), as providing 'clinical leadership within a specialism, bringing strategic direction, innovation and influence through practice, research and education.' He did reflect that it would be difficult to create the posts of consultant radiographers in a teaching hospital where *'people are very conscious of their position.'* There would seem to be an overlap of roles with those involved in clinical education but none that would seem insurmountable.

Research featured in the Department of Health's definition of a consultant practitioner though, as suggested earlier in this chapter, little radiographer-led research was taking place. Consultant practitioner posts in radiography would offer opportunity for progress in this direction, demonstrating claims to autonomous professionality in clinical imaging (Nixon, 2001). The manager of Department A recalled a meeting organised by the Welsh Assembly where the appointment of a consultant therapist to act as a clinical lead for several of the professions allied to medicine was discussed, a catalyst for research, innovation and continuing professional development of professions in a specific area. If such an appointment were to be made it would be understandable if managers felt threatened. As consultant radiographers' posts were intended to be new positions to which individuals were recruited, he believed that superintendent radiographers would regard them, as they tended to do with advanced practitioners, as a threat to their clinical leadership and performance. While he *'fully supported'* consultant radiographers he felt that:

> *'it's a very narrow cul de sac development* [...] *rewarding radiographers to take on small areas of specialisation. For as long as they do that they will have a great deal of difficulty getting universal recognition.*

At successive interviews it became clear that there was considerable confusion surrounding the prospective roles of consultant radiographers. The Senior

2 of Department C felt that they would be undertaking plain film reporting, advising on what views to do, vetting requests and *'taking over the radiologists' role'*:

> *'I think the consultant radiographer will happen eventually but we seem to be slower in bringing in that side than bringing in the assistant practitioners* [...] *the whole point of bringing in assistant practitioners was to develop the role at the top and that's just not happening'.*

He felt this was because *'radiologists don't want to let go'* and that assistant practitioners were *'coming in to plug a gap in the profession at the moment when they should be used to develop the roles at the top.'* The Senior 1 of the same department felt there was a role for consultant practitioners in the future if assistant practitioners were employed to perform examinations at the *'lower end of the scale producing more space at the top end to develop the roles of consultant'.* He believed there would only be *'a small percentage of consultant radiographers'* and, while there was a role for them, it would *'not be a universal role'*, that is, they would not be present in all departments or trusts. However, the Superintendent 3 at Department A believed that consultant practitioners' posts would be written for individual, experienced, clinical specialists with ability to *'carry a specialty through from beginning to end and advise other people on the results of the examination'.* He considered that if he were allowed to do everything he could *'run the whole game'.* He also felt the role should include some management and an involvement in staff CPD. His Manager seemed unsure of the place of consultant practitioners:

> *'we've almost got there with the sonographers really where we have a vascular specialist who deals with the clinician direct and is almost semi-autonomous because he has the patients in, reports them, liaises with the medical staff outside the directorate and has very little to do with the radiologist so that's almost a consultant role I think* [...] *those sorts of roles which could be fairly independent of radiologists could end up as consultant roles.*

He believed that he already had staff operating at consultant level and felt lack of research would not be a problem since those who had completed an MSc would have done it as part of their course. In contrast, the Senior 2 Department C felt that consultant radiographers would be largely involved in research. They would need to *'have certain experience within specific areas and they need things like Masters or PhD's. I think consultant is more a research led position rather than clinical'*. While there was awareness that 'research-mindedness' was an issue there seemed to be lack of certainty about what part it would play in the lives of consultant radiographers.

The Superintendent 3 of Department B expressed similar concerns, describing the whole grading structure as *'particularly spurious'* since an ultrasonographer with a reporting allowance could already earn more than the person managing a department:

> *'there's so much seems to be going on at the moment like injecting, interventional stuff perhaps, the bariums if the medics get the confidence that we're not going to threaten them then* [...] *and take some of the work away that they want to hold onto'.*

Radiologists might consider their position to be more at risk if there were recognised posts and job descriptions for non-radiologist clinical leaders. Currently radiographers' grades reflected the skills they performed. This would be reinforced by the four tier structure and rewarded by *Agenda for Change*, rendering it possible that radiographers performed to specific job descriptions, ultimately diminishing patient care and conflicting with skill-mix notions, as emphasised by the Department of Health (1997). The pursuit of professional advancement would dominate.

Advanced Practitioners

Advanced practitioner roles have existed for some while in ultrasound reporting, as have extended roles, such as performing barium enemas so that their impact tended to be regarded as less contentious than those of either consultant or

assistant practitioners. As the Superintendent 3 of Department C commented, *'lots of places are already calling their ultrasonographers advance practitioners aren't they?* [...] *they've already taken on a reporting role'*, in Department C, for example, rewarded with discretionary points for extra skills:

> *'that can be quite contentious because you have the manager role and the clinical role. Some of the managers feel they are going to be overtaken by staff that they're actually managing* [...] *in terms of the actual clinical skills that they have, will give them, if you like, more points and then more money'.*

Operating at advanced practitioner level required training to enter domains previously the preserves of radiologists and, as we have already glimpsed, raised issues of financial benefits to the service. The Superintendent of Department A referred to ultrasonographers performing the role of a senior registrar, yet being paid considerably less:

> *'doing an ultrasonography list all day which normally would have been done by a senior registrar then you should be getting the same remuneration as that senior registrar. Paying them a £2000 per year scanning bonus or whatever you want to call it whilst when they first get it, I think is attractive, it's almost an insult. It's almost like being bought off. If that's what they're doing, if their skills justify that then that's what they should get'.*

Unlike his manager, he appeared to be overlooking that ultrasound reporting formed only a part of any senior registrars' work.

The pivotal place of reporting recurred time and again in interviewees' perceptions of change at this level, for example, a Senior 2 in Department B commenting:

> *'The advanced practitioner we do have some of that already* [...] *a radiographer reporting a mammogram is nearly happening here anyway. We*

already have someone who reports ultrasound so she's already an advanced practitioner then isn't she? And we've got a couple of radiographers reporting films'

Radiologists dominated practice so that, for example, as there was only one barium enema session per week, she did not anticipate radiographers advancing into that area; it would not impact on radiologists' workloads. A Senior 2 in Department C anticipated that those reporting would be of advanced radiography status, since they were

"the end of the line". The doctors in casualty (accident and emergency) *are relying on their report...and I think they should be recognised for what they do especially when you think of the amount of courses and the extra work they have to do so that they are able to do reporting anyway.*

He considered that radiographers with these skills should be at a higher grade than their colleagues *'a high superintendent grade sort of moving towards a doctor sort of recognised grade like nurse practitioners say* [...] *more sort of professionals rolled into one'.*

Practitioners and assistant practitioners

Most of the information gathered, both by questionnaire and interview, as part of this study was 'about' practitioners' antecedents, work and prospects so that it would be mere repetition to devote a separate section to views of them here. In interview discourse about perceptions of the four tier structure, practitioners figured largely as *egos* to assistant *alters.* At one limit of opinion a Senior 2 radiographer from Department C envisaged that radiographers or practitioners in the new structure would no longer be undertaking radiography. Their role would be performed by assistant practitioners supervised by advanced and consultant practitioners, practitioner roles having disappeared:

'I think with the assistant practitioners I can see general radiography being carried out by them within the next 10 years with advanced practitioners and consultant radiographers supervising and doing on the spot reporting. I think that's the way its going. I don't see radiographers doing basic radiography'

Practitioner roles as we know them today would be divided between advanced and assistant practitioners. Such a view would have been regarded as contentious by most respondents, whose opinions on the four tier structure mostly focussed on the assistant practitioner level, seen as impinging upon and threatening current practitioners. A Senior 1 ultrasonographer in Department A agreed with a fellow Senior 1 that they were a threat to what he called the *'lower gradings'*. While most radiographers interviewed knew more about assistant practitioners than the other three tiers, several of those interviewed were unaware that the Department of Health (2003a) had described assistant practitioners as performing protocol-limited tasks under the direction and supervision of a state registered practitioner and required information or clarification of what was proposed before they could respond to questions. Managers, though, were expectedly well versed as to their prospective role and impact on x-ray departments. Some compared assistant practitioners and radiography helpers currently employed, assuming that the one would evolve into the other. While no assistant practitioners were employed in the departments under study, all employed radiography helpers. Constant reference was made to the ability of current helpers to successfully complete a training course and progress to assistant practitioner status.

At the same time, the very rationale for an assistant practitioner tier was questioned by the Superintendent 3 of Department C, who believed that:

'it does knock the profession back a little bit [...] *people who are trying to implement them strongly I think are the people who have got problems with vacancies and they're looking for quick* fixes [...] *directors of finances who quite like them because they're cheap and if we go back and say OK we'd now like to appoint radiographers...they are obviously going to be saying*

'Thank you very much but why do you need them? These people are already working in your department'".

There was agreement that assistant practitioners were introduced in the new structure initially because of the shortage of radiographers. Vacancy rates had decreased recently but managers agreed that the crisis was not over yet. New government initiatives and targets required an increased workforce with different skills if patients' needs are to be met:

> *'We've had a continual decrease in the number of radiographers being trained and for whatever political reason and I'm convinced it is political* [...] *they have ignored radiography because radiography comes under radiology and doesn't get recognised and* [...] *because therapies have* [...] *promoted their public image so much better than we have done...training has been reduced by implication* [...] *we don't need as many radiographers* [...] *there's been a knee jerk reaction nationally now. We will now have a huge swathe of these people coming out* [...] *Circumstances have put the service at ransom and they can't allow that to happen again'* (Manager, Department A)

His Senior 2 put it more pungently, considering assistant practitioners to be *'cheap labour'* with no part in radiography departments. He believed that shortage of radiographers had been caused by increasing 'A' level entry requirement for undergraduate programmes, reducing the number of eligible applicants. However, it had been suggested that if entry qualifications were not sufficiently high not only would students be ill equipped to deal with the programme but there might be many who would not apply for radiography, believing their qualifications would be better used on an alternative course. Since applicants for radiography programmes had increased over the last few years it was unlikely that entry qualifications were implicated in this way. The number of mature applicants has increased and alternative qualifications other than 'A' levels are now accepted.

The Manager of Department C took the view that even though assistant practitioners were being introduced in other parts of the country there was no need

for them in his geographical area. Service needs were being met by current arrangements, there were virtually no radiography vacancies in local hospitals and sufficient radiography helpers were employed to support radiographers and enable them to put their skills to best use. The Senior 1 ultrasonographer in Department A held a similar view. However, both seemed to fail to grasp that assistant practitioner roles were not intended to 'fill a gap' arising from a shortage of radiographers but, as part of the new four tier structure, re-designing service delivery in more cost effective and efficient ways. The Manager of Department B was not in favour of assistant practitioners who, she felt, were being trained *'to do routine stuff and there is very little that is routine'*. A Senior 1 in the same department referred to assistants at level four of the *NHS Career Framework* as *'imaging technicians'*, describing their role as *'supporting radiographers'*, more than was the case with existing helpers, though not undertaking imaging of patients. Such technicians could perform preparatory work for CT or MRI, for example questionnaire completion and intravenous cannulations. However, he was aware that assistant practitioners in other centres had been trained to undertake plain film examinations, particularly of the chest and extremities, in one centre assistant practitioners undertaking 40% of plain film examinations during normal working hours. (Department of Health, 2003a). As with many other respondents he did not believe there to be straightforward x-ray examinations. All areas carried an *'air of complication'* that only a suitably qualified that only experienced radiographers could deal with. The level of training required to recognise inappropriate requests or abnormal appearances would be approaching that of a fully trained radiographer, thereby negating the need for assistants whose practice would be restricted. He did not see the value of educating them only to a level that would require constant supervision and checking:

> *'you end up having just as many radiographers but standing around not doing stuff just looking at other people's stuff which is not good for them and not good for the person they're supervising* [...] *I don't see any necessity for them to x-ray anyone'.*

The Senior 2 in the Department had similar concerns regarding their usefulness; if they required supervision *'I don't think there's a place for assistants* [...] *if we've got*

to supervise them I wonder how useful they will be'. Such views stood in clear contrast to the lonely position taken by a Superintendent 3 from Department A who considered that if the radiography profession wanted to move forward *'assistant practitioners will have to take away some of the basic parts of our job'.* His part-time Senior 2 colleague much more nearly represented mainstream opinion in her uncertainty as to whether assistant practitioners should x-ray patients, though they might position them on the x-ray table, radiographers checking positions before making exposures. In Department C helpers had been working like this for some time but it was recognised that their work fell short of the proposed role of assistant practitioners since they did not perform radiographic techniques. Its Senior 2 was unable to identify any advantages of introducing assistant practitioners, while a Senior 1 believed their introduction would disadvantage radiographers practising in general areas who, up until recently, had not been rewarded for their expertise. He was also concerned with the negative effect that the introduction of assistant practitioners would have on undergraduates:

> *'I'm very anti assistant practitioners* [...] *I think it's a short term fix* [...] *but if they're going to come in I believe that we're the ones that need to train them...I believe it's going to be to our detriment'.*

He admitted, at the same time, that if radiographers wanted to develop their roles they should be willing to *'relinquish the lower end of the* market' but not by *'bringing people in who are not fully qualified',* degrading radiography education and radiographers working in general areas: *'It's only now that they're being recognised* [...] *for their expertise and it is quite an expert part of the profession and I think its neglected'.*

Immediate fears of loss of jobs did not appear to be a major issue, though there was predominantly disquiet at the prospect of current radiography helpers receiving training and becoming assistant practitioners. Not untypically, when asked if current helpers would become assistant practitioners and undertake limited imaging procedures, the Superintendent 3 of Department B put it very bluntly: *'Over my dead body. I'd like to think not'.* One might imagine that such a remark failed to

appreciate that the selection process for entry to assistant practitioner training would preclude those who he considered lacking ability to complete successfully. The Senior 1 in Department C represented a more emollient view on the matter; there would be a natural progression from radiography helper to assistant practitioner but through traditional means. In his department radiographers were *'"mortified' that there are helpers saying to students "Oh I'll be working a long time before you will be"'*, feeling that the way to maintain standards was to say to radiography helpers *'"If you want to do radiography go on the BSc course."'* There was no shortage of radiographers in this department, while there were opportunities for role development. A Senior 2 colleague recognised that departments were getting busier, something perhaps his colleague had failed to appreciate and, as a result of the NICE guidelines, they should anticipate a rise in imaging examinations. On this logic, the purposes of employing assistant practitioners were to *'plug the gap overall because there aren't enough radiographers'* and:

> *'to increase staffing levels at no significant extra cost* [...] *there's a higher throughput of patients and there's less funding to increase staffing levels whereby if they have assistant practitioners then its going to make life a lot easier for casualty and clinics and the load overall'*

Different solutions to prospective greater activity and skills shortage were offered by a Senior 1 in Department B, as well as by others. He felt that increase in student numbers and future graduates could negate the need for assistant practitioners performing diagnostic imaging, with helpers continuing to provide additional support for radiographers. Undergraduate intakes had increased over the last few years. His Superintendent 2 reiterated that there would continue to be no role for assistant practitioners in his department since the lowest grade radiographers employed were Senior 2. The majority of examinations undertaken were not straightforward or basic and were, by definition, not suitable to be performed by assistant practitioners. The Manager of Department B believed that the drive to introduce assistants was neither new nor had it evolved as a result of shortage of radiographers. Assistants would not *'free radiographers up to do other things* [...] *there is a limit to what the radiologists will let radiographers take on.'* His

Senior 2 was typical of many respondents who felt that, while there might be a place for assistant practitioners, it was in other imaging departments:

> *'places like* (Department A) *where they've got a bigger department, a bigger areas to cover more staff whereby you'd be able to dilute them...absorb them. Here, there's, at the most, eight radiographers at the most at a time in the general area if you've got two assistant practitioners then I think it may be difficult.*

Respondents' perceptions of the desirability of assistants were naturally influenced, as with other matters, by their previous experiences. High turnover of staff and lack of qualified radiographers wanting to work in her department contributed to the Superintendent 2 of Department A's suggestion that there was a place in the workforce for assistants as long as there were controls on their training and scope of practice. The Manager of Department A anticipated that in five years time he would have several applications for each radiographer (practitioner) vacancy and be able to fill every post. If his prediction was confirmed, need for assistant practitioners would likely disappear unless radiographers moved into currently radiologist-led areas. His Superintendent 2 did not consider there would be a need for assistant practitioners unless there were staff shortages and employing radiographers rather than assistants would offer more versatility in the operation of her department since *'they are of more use to me than an assistant practitioner but then I suppose if you are absolutely desperate for staff then they do have a role.'* They might have a role in *'releasing the radiographers to do other things as well'* but this would need clarification.

The literature suggests a further perspective, with Betts et al. (2003) reporting that assistant practitioners helped to spread workload, reducing stress and workplace pressure, enabling a department to staff a chest room that would have been difficult to run without them, thus improving service. Chest radiography is frequently cited as an examination which could be performed by assistants and was described by informants as 'basic' and 'mundane'. But a Senior 1 in Department C was insulted by the College of Radiographer's suggestion that assistant practitioners

should be introduced to enable radiographers to relinquish 'mundane examinations'. His comment was *'if you're having a mundane examination, it's not mundane is it?'* To describe work in general radiography as 'mundane' was an insult to the expertise and experience of those who carried it out. While there had been no discussion as to whether to introduce assistant practitioners into specialised areas, such as CT or MRI, where it could be argued that the technology available and the use of protocols required less skill to produce a diagnostic image than in general radiography, this Senior 1 was concerned with job losses, since radiography graduates began their careers in general radiography, where assistant practitioners were likely to be employed, undertaking simple, straightforward examinations on salaries far below that of practitioners. In order to save money departments would be tempted to employ assistant practitioners and graduates might be unable to find employment. On this logic, the group to be most affected by the introduction of assistant practitioners were recent graduates. The newly qualified radiographer in Department A had initially considered their introduction to be unfair but, on reflection, was feeling more positive, seeing that they might have a role in imaging hands and feet. Her view was based on the assumption that assistant practitioners would evolve from radiography helpers currently in post (although this might not necessarily be the case) who might not be appropriate to take on this extra role:

> *'In the beginning I thought it was really unfair because I thought we'd trained three years to be able to x-ray hands and things but certain helpers you think they could be really good at doing this* [...] *some of them could more or less do it anyway. So I don't know and it would really help the workload for us because down in A&E you spend a lot of time doing hands and feet when you could be doing...well there's about five hands and feet and then there's skulls and things waiting to be done and the skulls have to wait because you're messing around doing the odd hand and foot and I think it depend s because I think the right people would have to be chosen. Some people I think would be really good at it while others I think you'd think "Oh my God no chance". '*

It appeared impossible for respondents to work out what, if any, radiographic examinations assistants should perform and to decide on the definition of what constituted less complex examinations:

> *'I thought they would be restricted to chests and fingers and hands-stuff like that because there are no national guidelines I've spoken to people from other hospitals and there doesn't seem to be a limit on what they can and can't do'.* (Senior 2, Department C).

A Senior 1 of Department B did not consider extremities to be any easier than a lumbar spine:

> *'All the areas you might like to think about putting them in carry an element of complication that only a radiographer with their experience and their training could deal with. Even routine GP lumbar spines with back ache someone is going to come in with something a bit weird that needs further evaluation or needs bringing to the attention of a radiologist or a more senior member of* staff [...] if *you train them up to that standard are you not half way to producing a radiographer anyway'.*

In similar fashion in Department A, the Superintendent expressed frustration with the assumption that assistants would do hands and feet, which were termed *'simple stuff'*:

> *'If one more person, either a radiographer or a manager, or a helper says that all they'll do is the simple stuff, you know, the hands and the feet* [...] *I'd say then they don't know how to do a hand and a foot properly within a casualty environment or even within the main department'.*

Such restriction would be impractical:

> *'You've got patients coming in for perhaps hands, feet, lumbar spine and thoracic spine and what are you going to do* [...] *pass the patients on? One*

of the things I think you tend to do [...] *if you start examining a patient* [...] *you expect to see it through and I think it would be very unprofessional to pass the patients on from one radiographer to the other.*

Assistants could position patients for examination, particularly in CT, as well as helping in the general running of the department:

'Perhaps it would be a little bit more than just having a helper coming in [...] *putting the patient on the bed and a limited amount of positioning wouldn't be any harm* [...] *some of the things they should be able to learn is anatomical landmarks. Identifying patients, identifying what areas need to be done...you know things like that. That would be a major, major help'.*

While such tasks were being regarded as possible, future, assistants' activity in Department A he felt they were only appropriate is some areas, possibly chest imaging but not in accident and emergency '*because there are too many variables for them to cope with. They'd need to adapt their technique too much'.* The Superintendent of Department C and his colleagues agreed that there might be purpose in expanded, assistant roles if the department had a specialised room where only one type of examination was performed but these were found only in large departments where workload warranted them:

'I can see a use for them in places like Department A where they have a dedicated room [...] *where perhaps you could have a dedicated chest room and that's all they do is chest radiography and they're trained to a standard and perhaps supervised by Senior radiographers. In this sort of department, the DGH, where there aren't dedicated rooms for anything the general work is by nature general. You can have anything coming through from GP lumbar spines to crash trolleys and RTAs. I don't think there's simple ways of utilising limited skills in this sort of department'*

The repetitive nature of examinations performed in a dedicated room would make assistant practitioners' roles more straightforward and less demanding. However,

the Senior 2 radiographer permanently employed in the dedicated chest room of Department A saw no place for assistant practitioners anywhere in the Department. Having worked exclusively in a chest clinic for several years his Superintendent 2 considered that assistant practitioners would be more suited to mammography than chest imaging since it was *'not a very skilled thing'*, being *'very repetitious'*, whereas chest x-rays *'aren't that easy to do'*. She could not envisage running a radiography service where assistant practitioners only performed 'normals' since it would be impossible to predict and guarantee *'what patients would be like'* To simplify radiography by assuming that all examinations and patients are the same *'devalues what general radiographers do'*. This Superintendent had a wide range of experience in most specialities, having worked in MRI, CT and ultrasound, none of which were what she would call radiography, which she defined as *'what you do down in accident and emergency and in the general department'*. Even the Manager of Department C, where roles only prospected for assistants in Department A were already the daily work of his helpers, foresaw that assistant practitioners' scope of practice could become so limited that they would be of no practical value:

> *'the basic thing of radiographers is having the background in radiation protection, the anatomical and clinical knowledge and all that as a package* [...] *this person hasn't got that and again if we take them on we are limited with what they can do. Can they work alone on call? If they can't work alone on call do we end up with a load of assistant practitioners by day with a few radiographers and radiographers doing the nights when we really want the clinicians to work in the day when we want them doing the main bulk of the work so we're...it snowballs a bit I think and brings its own problems with it'*.

That assistants' practice would be limited, since no examinations were straightforward or simple enough to dedicate to them was, then, a regularly reoccurring theme. Variations in patient type, age, mobility, pathology, injury and psychological need would all have to be considered. They could become frustrated by restriction of the examinations they would be allowed to undertake, though they might use assistant practitioner status and experience to gain access to the radiography degree programme:

'I think they will end up being robots. It would be nice for them to work for a few years which would be enough to get them onto a radiography course because I know a few of the helpers now are doing the access course to be able to do the degree in radiography next year but if they could work as well I think it'll be a great help to them'. (Senior 2, Department C)

Levels of regulation, supervision and training were also of great concern. The Superintendent 3 of Department A pointed out that the *Guidance* issued so far had not explained precisely where supervision started. It was assumed that departments would develop their own protocols for assistant practitioners:

'They are supposed to be supervised but where do you supervise them? Where does the supervision come in [...] *do you supervise them at the end of the film and say* [...] *'yes that's fine or you've chopped that bit off' or do you supervise them when the patients comes into the room?* [...] *if so you do you might as well do it yourself. I don't think you'll ever replace radiographers with assistant practitioners. I can see a place for them certainly with the help and it would be nice to call them assistant practitioners and I think there is a qualification there for them to have.'*

A part time Senior 2 radiographer (Department A) was unsure of the advantages of assistant practitioners since they would save little, if any, time. She also had concerns that their training would be insufficient and that *'standards would drop'*. The need for regulation to ensure standards was also raised by other respondents. Since assistants had to be supervised by qualified practitioners who would be responsible for their actions, regulation by either the HPC or the College of Radiographers was being considered but was unlikely to be introduced.

The Manager of Department C saw the introduction of assistant practitioners causing practical problems with respect to their training and supervision in clinical departments:

'I think they're a problem, I don't think they are thought through yet we don't know who is going to look after them who is going to regulate them what are they going to get paid. That could be sorted but then are we eroding [...] *locally I think we would have a lot of opposition as well. I think the radiographers would not take to it well and we are expecting the radiographers to train them then there could be some friction there'.*

Superintendent 3 of Department A feared that assistant practitioners could, through lack of training and experience, undertake inappropriate examinations and expose patient to harmful, ionising radiation:

'a practitioner is going to pick a form up which hasn't been vetted which might have some 'iffy' clinical indications which a qualified radiographer would pick up.'

Under supervision such situations should not arise but, if supervision processes were time consuming, it would be more practical to employ one radiographer than a radiographer and an assistant practitioner. All interviewees were clear that recruitment, training and education of assistants were matters of major concern, in need of clarification at the same time as decisions as to the precise character of their roles was agreed.

Training and recruiting assistant practitioners

If interviewees were poorly informed and revealed several misconceptions regarding the prospective status and activities of assistant practitioners they expressed themselves as being even more in the dark as to their training. They evinced no great awareness of the increasing number of assistant practitioner programmes being developed in the UK, some requiring students to complete the first year of, and allowing subsequent continuation with, the undergraduate programme. The Superintendent 2 of Department A stated she *was 'unaware of the training for assistants and did not feel it appropriate that assistants radiograph*

patients with no training.' IR(ME)R Regulations (2000c) did not permit patients to be exposed to radiation unless operators had undergone training.

Virtually all believed that it would be inequitable if assistant entry qualifications were considerably lower than those for the undergraduate programme, particularly if progression was allowed onto a degree course. The Superintendent 3 of Department A contended that:

> *'if you think of some of the kids coming now who have to have their 'A' levels to get in to do it and if we're going to open the door to people who don't have very much in the way of a formal education and let them get on* [...] *then I think it's unfair. I think the advert should go out for these jobs and try and attract people who at least have some 'O' levels* [...] *well GCSE's.'*

Such a view was clearly unsympathetic to initiatives encouraging widening access and participation in higher education, where routes into undergraduate radiography programmes now include access courses and other qualifications, particularly for mature candidates. Alternative arrangements for training assistants already in existence elsewhere require candidates to successfully complete access and NVQ courses which enable them to gain entry onto the first year of undergraduate programmes. Dependent on the mark achieved at the end of the year, either assistant practitioner status is awarded or progression allowed into year two of the BSc, with possible graduation as a radiographer after another two years. Assistant practitioner courses which have been established have sought approval by the College (Society) of Radiographers but there has been no official requirement for them to do so. A Senior 2 in Department B and a radiographer in Department A felt the first year undergraduate programme to be suitable for training for assistant practitioners, though it should not be used as an easy route for students to become radiographers since they would be employed by the Health Authority and not amassing a student debt. The Senior 2 contended that full training should be undertaken full time:

'if they are that keen and serious about doing it they would do it because if it's made really easy then every Tom Dick and Harry would want to do it and that's not right

The need for a nationally recognised qualification was discussed by the Superintendent 3 of Department A who also considered there should be a national standard and qualification, *'you've got to be looking at a diploma of some sort* [...] *in order to obtain quality you need standards'*. He felt it is not acceptable for standards of training for assistant practitioners to be variable, believing that the Society of Radiographers should be *'leading this and not leaving it to universities'*. He was unaware that the Society of Radiographers had produced guidelines for the development of assistant practitioner programmes

A Senior 2 in Department C considered problems associated with assistant practitioners' programmes where students were employed by departments and released two days a week to attend lectures:

'I think it's a good idea but I think it would be like a step backwards with the old...the diploma [...] *we've heard stories of people doing three days in work and then two days in college every week. I think it could work but there would have to be a separate course again for them.*

The Manager of Department A saw the assistant practitioner grade as a means of accessing the radiography undergraduate programme:

'We will take on potential radiographers that can't or haven't been able to make the grade to get into a School of Radiography to date and I think those people will [...] *we've had two or three and I've now got another two that want to do it* [...] *come into radiography or come into radiology departments and X-ray departments and say "I quite like this radiography thing this is quite interesting" and they'll use that as a means through. So that one year allowing them to do it and then a preceptorship and then going on to do radiography I think is very good'.*

The Manager of Department C felt that education centres would supply courses but that:

> *'we're a long, long away from that so far because although people are making noises and they might be doing it* (introducing practitioners) *elsewhere they are certainly not doing it locally'.*

The source of assistant practitioners was contentious, particularly among informants in Department A who felt that the confidence and expectation expressed by many of their current helpers in relation to becoming assistants was unjustified and not reflected in their abilities. The Superintendent 3 of Department A felt that, within imaging departments, there was

> *'an assumption that everyone who is a helper will become an assistant practitioner* [...] *and an awful lot of them haven't got the capability to do it. For some people it's very appropriate and you'd have difficulty objecting for others it isn't. You've got to pick your people'.*

Both he and his Superintendent 2 had concerns regarding the ability and misplaced confidence of helpers who might wish to become assistant practitioners. While they believed some were capable of doing so, others did not have the ability to progress from their current role. Their colleagues were unanimous in regarding it as inappropriate that assistants should be selected automatically as helpers from those currently in post and that some other criterion should be employed. The Manager of Department C thought that assistant practitioners might be recruited from non-academic radiography students who were good practically:

> *'Radiography is a very practical job* [...] *I've known very good academics who qualified who were lousy radiographers and I've known very good radiographers who weren't very good academically* [...] *You've got kids who can do the job who can't do the exams. Perhaps that's where the assistance practitioners come in, I don't know. If they're good at the job and they fall at the later hurdle well perhaps they can become assistant practitioners and*

take those other roles. There are people [...] *I've known quite a few, who just couldn't do exams but they were very good in the department* [...] *or they were damn good radiographers but as I say you've got to have a piece of paper at the end of the day'.*

He raised the question of whether assistant practitioners would be recruited directly to universities or drawn from helpers already employed. Unlike what appeared to be the case in Department A, where several helpers were anticipating the development of an assistants programme locally, he felt that there were few radiography helpers in his department interested in training to become assistant practitioners. His belief was that able, existing radiography helpers would probably join undergraduate programmes if they were interested in becoming radiographers rather than using assistant practitioners' courses as an entry route to a degree and practitioner status. He cited the cases of two radiography helpers employed in his department who had gained places on the undergraduate programme, a mature candidate who had obtained an access course qualification, the other with 'A' levels taking a year out to decide on his future. Both had used helper roles to gain experience and to make a decision on their future. He felt that this experience had provided them with insight and might be commended as an introduction to radiography.

Radiography Helpers

Most radiography helpers currently in post had started as darkroom technicians, although some had been directly employed. Darkroom technicians were traditionally responsible for processing x-ray films and maintaining processing equipment. However, with the advent of daylight processing, many had progressed to become radiographers' aides with little or no further training, their tasks tailored to the needs of Departments, including quality assurance testing, preparing patients for examinations, chaperoning, transporting patients and fetching and carrying image recording materials. More recently in some Departments helpers had prepared patients and equipment for examinations up to the point of exposing the patient to radiation. A few had obtained the National Vocational Qualification (Level 3) in Clinical Imaging Support.

Radiography helpers in Departments A and C were not imaging patients but supported and worked alongside radiographers. In Department C helpers had been preparing patients and equipment for imaging examinations for some time, accounting for the lack of support within it where their already enhanced roles negated need for further support from unregistered team members. A Senior 2 commented that he had seen the number of radiography helpers increase *'three fold'* since he qualified three years ago and anticipated that growth of an assistant practitioner grade would take place in much the same way. In his department there were now five radiography helpers, effectively reducing the workloads of radiographers:

> *'.by bringing in more helpers and looking at the way the patients move through the Department* [...] *So we are getting better value for money out of our radiographers as well, they are actually doing radiography they are not running round between the* (examination) *room and the waiting room changing people and that sort of thing* [...] *we're getting them doing the job as they are being paid for.'*

The Superintendent 3 and Manager of the Department echoed these comments, explaining how helpers had been integrated into the department. Workflow was still being examined to establish if more improvements could be made. For the Manager:

> *'we are using helpers more and we are supporting our radiographers more and that's valuable as well because we are starting to look at a little bit more critically about how radiographers work'*

The general feeling among these informants was that expanding the roles of helpers enabled radiographers to focus on image producing and evaluating and less on administrative and basic patient care skills which could be performed by helpers. Such change potentially negated need for assistant practitioners, particularly given recent increase in undergraduate intakes.

In Department B helpers had distinctive information technology responsibilities, explaining its Senior 1's comments that assistants could provide valuable support to practitioners without performing imaging. Their managers considered them to be operating already at the same level as assistant practitioners, although their skills and roles, described by their Superintendent 3 as those of *'radiological and technical support staff'*, were unlike those of their counterparts in other departments. He described them as being *'confident'* and *'wasted here in all fairness'*:

> *'They do very little in terms of helping the radiographer out they deputise for me in terms of looking after PACS and RADIS and their skills lie in the IT side of things rather than looking after patients or dealing with patients although to a certain extent they could do this job standing on their head. I think one of the problems is that we've become a little bit too reliant upon them. If either of them or both of them went then we really would be stuffed. And we keep heaping on additional responsibilities which they are quite happy to take on but at the end of the day you've got to realise that there comes a point when they have to be paid more for what they're doing'.*

In contrast, informants from Department A did not rate support which they received from their helpers as highly as their peers were inclined to do in the other two departments. A part-time Senior 2 radiographer had concerns that some helpers were *'better than others'*, some were not *'much help at all really'*, while others *'get a patient into a room knowing whether they're supposed to be lying on the table or stood by the chest stand and have everything set for you which is a help'*. There might well be questions to be asked as to whether such lack of consistency could be overcome by more adequate training of helpers, very little of which appeared to take place outside of obligatory health and safety and manual handling instruction (Health Professions Wales, 2004).

The interview data reviewed in this chapter has at many points tacitly implicated the importance of radiography education as the benchmark to which all training and education of radiographers and support staff should be referred and

compared. Respondents were asked explicitly for their views as to their own and others' educational experience which are presented in the next chapter.

Summary

By far the dominant issue characterising the interviews was radiographers' 'role development', changes in their tasks and functions usually entailing shifting boundaries between their own and radiologists' activities. Amid concern that it was not simply or innocently led by considerations of patient benefit, there was a persistent belief that it was essentially 'shopfloor generated', driven predominantly by staff shortage and clinically driven technological change, seized upon and shaped by government policies in what we may characterise as the essentially command economy of the Health Service, under the twin drives of what counted as expedient policy goals and resource efficiency. Its character must be at least partly understood as a drive toward labour flexiblisation, far from unique to the world of our respondents, indeed characterising most public and private production and raising here, as in other contexts, issues of power and control of professional space. In settings where radiographers might be depicted as running out of general things to do, increasing specialism marked their work, having changing differential effects, across Departments, on their scope and independence of practise, ranging from what were depicted as the relative 'freedom' of work, for example within A&E to the firm, controlling embrace of radiological defensiveness, for example in relation to line-insertion. While radiologists, some more than others everywhere, were prepared to relinquish some areas to largely or wholly radiographer operation and control, the heart of the latter and the focus of many, though certainly not all, radiologists 'development' ambitions was the right to report. We identify this as the knowledge core of professional power in general and, in our case, radiologists' in particular.

The three departments under study differed in the extent and incidence of radiologist control over radiographer practice. It was tightest in Department A, on the face of it somewhat paradoxically, given its size and range of activity. Our data suggests that it was rather divided and factionalised, attributes not helped by recent merger. The training of radiologists in a teaching hospital context was prioritised but though this would account for some limitation on the opportunities of radiographic

staff, issues of personality and preference among key radiographic staff (with exceptions) were persistently reported as being more significant. Department C, in a medium size, new, general hospital setting, provided some thing of a mirror image of many aspects of life in A, in these respects. Radiographers interacted with radiologists in informal and easy manner and opportunities for the former to rotate around the range of procedures offered were built into its staffing structure. In further contrast, specialist teams permitting little or no rotation characterised the work structure of Department A, while in small, specialised Department B, employing only experienced staff who moved around most tasks, though generally under clear radiologist control and 'role extension' was slow, individuals evinced a sense of autonomy and empowerment.

If diversity marked the roles of the radiographers across the departments under study it no less characterised the origins, responsibilities and roles of their managers, increasingly pivotal in structures where policy initiatives were suspicious of 'producer interests', target driven and prospected not altogether popular new forms of 'skill-mix'. Their views of themselves and their colleagues were also intriguingly varied. Versions of tendencies and events from their and 'shopfloor' perspectives, as is inevitable in such organisational circumstances, often failed to concur, perhaps with most serious import where many staff described their manager as being somewhat Janus-faced about their 'development', enthusiastically embracing their wishes for change in their presence and presenting them in a rather different aspect in more strategic contexts. There was also a tendency for managers to over-represent opportunities in their departments for specialisation and advancement, which might be taken as virtually synonymous, in comparison to staff accounts of their aspirations and experiences. With respect of the four tier system, already early implemented elsewhere and in prospect in our departments, there was some speculation among both as to how the new structure, particularly at the level of consultants, would impinge upon managers' positions. This symptomatised a wider unclarity, certainly among radiographers, as to the particulars of the prospective system and its relation to skill-mixing in the context of the regradings entailed in *Agenda for Change*. There was virtually universal scepticism as to the likelihood of the creation of consultant posts though, apart from an apprehension

that they would entail research and that research was important to establishing. At the same time it might not be too much of an exaggeration to claim that the tacit message behind the views expressed was the hope that 'we are all (or would certainly like to be) advanced practitioners now'. If this is somewhat contentious, then the near universality of respondents' rejection of the proposed place of assistant radiographers was not in doubt. Fear that they were already trained and undertaking aspects of radiographers work elsewhere was matched with doubt both as to its clinical and professional-political appropriateness in these departments. Accustomed to using helpers in a variety of differing ways in different departments, transforming them into qualified colleagues was not welcomed, even regarded as mortgaging an uncertain future of graduate entrants to come.

At the end of the next chapter I comment on a number of the conceptual and practical issues raised by both the context and content of such interview responses. Embedded in them is the difficulty, of which I was aware in advance and which I attempt to countervail in the framing of items and prompts, both in questionnaires and at interview, of asking people to distinguish between reflections upon their own experience and their views more generally. The former relies on recollection, the latter on knowledge of others and events. One cannot undertake research of this sort without the realisation that both are fallible and, inevitably, subject to editing even by willing respondents in the light of their overt and tacit decisions as to who they wish to present themselves to be. All one can fairly say at this point was that my sense of the interview 'conversations' that I had with individuals in the main conveyed senses of honesty and spontaneity. Confusion and self interest jostled with attempts at the magisterial. The form of the information offered was as complicated as the highly varied and frequently exceptional practices to which they referred. We now turn to these with respect of the views presented by interviewees of radiology education and its products.

Chapter Seven

Radiography Education

Making connections

The possibility of drawing out implications for pre-service education from the data collected is twofold. It rests both on inferring indirectly from the information that was gathered by questionnaire, interview and informal observation as to the varied work of radiographers and what practitioners said directly about the performance and quality of students whom they encountered. Both have obvious appeal and limitation, the latter not least because respondents seemed strongly drawn to dwell on their own training, even though it might have occurred several eras before, as a template against which new entrants should be judged. There is always a tendency within people-processing occupations, like teaching, medicine, nursing and social work, for practitioners to look back to more golden ages, partly at least in defence of the low-technology, personalised and judgmental character of interpersonal service delivery (Davies, 1994). Radiography, along with all allied to medicine specialties, is subject to such tendencies.

Debate in the face of change in pre-service training in, for example, teaching, nursing, medicine, the law and police work have all spun around the themes of theory-practice balances, the ratio of hands off to hands on experience, skills or competences, the nature of judgment and the motivation and comportment of 'new students'. (Thomas, 2003) Moreover, in this study, as in others, judgments were inevitably trammelled by the effect of time on memory, tending generally to act selectively to reinforce beliefs, themselves as much a function of practice as its generator.

The knower: the perceived abilities and attitudes of undergraduates

A Senior 2 from Department A stood out from most other respondents, feeling strongly that degree students were not up to the standards of former diplomates, incapable of performing general radiographic skills effectively. He also had poor knowledge of current curriculum content and changes in general radiography and of the four tier system. In Department B, the Superintendent 3 radiographer believed that he had noticed a change in the attitudes of students, who *'want things on a plate* [...] *a product of the way of life'*. Students should not be *'spoon fed'*. Their and patients' expectations were higher than they used to be, empowerment resulting in:

> *'people expecting more and wanting more "I know my rights and you can't tell me to do this and you can't tell me to do that" whereas I just got on and did it. If somebody said jump you'd say "Well, how high?', you know'*.

While such attitudes were not totally damaging they were held to adversely affect the running of a Department where *'sets still have to be cleaned, cassettes have to be carried around the place, patients have to have intimate things dealt with'* and *'there needs to be staff willing to get on and do the jobs required.'* Some students lacked initiative, which was *'different from not wanting to do things'*. He described many students as *'lacking the ability to think what needs to be done,'* even though a small percentage seemed to know *'exactly what's expected of them'*.

Similar observations on students' attitudes were made by several others and were considered to be a general cultural or developmental phenomenon, rather than something peculiar to radiography students. When comparing students of ten years ago with those of the present, the Senior 1 in Department B claimed to find them to be quite different. In common with all young people *'they come expecting things easier for working less'*. At the same time, greater numbers of mature students were also having an impact:

'they bring their own set of advantages and disadvantages. They bring a lot to the profession and I am not knocking that but they also bring maturity with them and as mature students they will question more than students who have just come out of school and that brings its own problems as well. There's good and bad in it. I think the attitude generally is not the same as it was'.

This questioning and challenging approach of mature students was also described as a *'general lack of respect'*. Staff did not welcome their over familiarity or over friendliness. The issue of respect appeared to be important, often raised when discussing students' and graduates' performance in the workplace and largely explicable by cultural or generational differences exposed when mature staff compared their own student and neophyte experiences with those now before them. In the earlier years of radiography education students were expected to fetch and carry for members of staff, supporting them in their role and, hopefully, learning during the process. Now students were expected to question, challenge and explore in order to prepare themselves for future roles as evidence-based, practicing radiographers. Radiography education was still structured around practical and behavioural objectives to be met in each placement, including assessment of clinical ability, attitude, motivation and willingness to learn. The Superintendent 3 of Department C recalled how, when he was advised, several years ago, by his counterpart in another department, *'Don't take that person on they're* dreadful', his answer had been *'You've had them for three years you should have trained them, you should have got them working to a standard,'* clearly putting the onus on clinical departments rather than education centres to ensure their competency. Though some students were *'un-trainable'* and would consequently leave their courses, managers should be confident in employing those who had undertaken their clinical education in their own departments: *'there shouldn't be any student leaving us, I don't think, that people are unhappy with and thinking we might have to appoint that person in the future.'* He explained that George (clinical lecturer) informed first year students that *'they are on a three year interview when they are with us,'* but that *'we've also got to make time.'* He felt that staff were not adequately participating in students' clinical

education and such lack of involvement '*rubs off both ways*', explaining that de-motivated staff engendered de-motivated students.

The knowledge base

It is well to bear in mind that 27% of questionnaire respondents and 60% of those interviewed acknowledged that they were unaware of the detail of current content of radiography education courses. This 'unawareness' was greatest among respondents in Department A (35%) and less so in B (10%) and C (15%). The Managers of departments A and C were well aware of current curriculum content, while their counterpart in B, unsurprisingly, had less knowledge since hers was used less frequently for students' clinical education. The Superintendent of Department C claimed typically:

> *'I honestly don't know enough about the course. I see the students on site and things but I don't see them working clinically and I don't have a great knowledge of exactly what's involved with them.'*

Such a response might either indicate need for improved communication between radiography education centres and imaging departments or that pressure of work left staff little time to engage in discussion with or to read literature regularly sent by education centres to Departments regarding courses.

Clinical lecturers responsible for the organisation and assessment of students' learning were present in Department A for five days per week and Department C for two and a half days per week. Their explicit task was to act as link tutors, enhancing communication between the university and departments, providing staff with resources for students' education. Opportunity for communication between the centre and departments also existed in the form of meetings held between lecturing staff, clinical educators and radiography managers, although these only took place three times per year. It would appear that neither was information from such meetings effectively

relayed to staff nor were clinical lecturers and link tutors succeeding in taking less formal opportunities to convey information to them. Staff tended to see students' clinical education as 'their', rather than 'our' province. In contrast, in Department B, where only one student at a time was allowed on placement, clinical lecturers' visits were infrequent and, as we shall see, staff involvement with students' clinical education was greatest. Its Superintendent 3 felt that academic and clinical staff involved in students' radiography education should work more closely together, with regular meetings to discuss issues relating to students learning

Degrees versus diplomas

The issue of whether courses should be at degree level was raised by many respondents, particularly those diploma qualified. The newly graduated radiographer in Department A had been told elsewhere:

> *"'We don't know why they made this a degree course there's no need it's just paperwork" and "It's just a waste of time you don't need a degree to be a radiographer. How can they turn such a practical job into a degree?'"*

She had not experienced such sentiments in her current place of work where *'the people I hang around with and talk to socially they are all degree radiographers anyway'*. She took the view that she would not have undertaken a radiography programme if it had been a diploma, particularly since physiotherapy, nursing and occupational therapy were all three year degree programmes: *'I wouldn't have done a three year diploma course just to do radiography.'*

It might have been anticipated that derogatory comments would be made by diploma trained radiographers, as with nurses trained before Project 2000 (Davies, Phillips and Neary, 1994) who had failed to recognise and appreciate the intention and values of programme changes since they qualified and the need to compete with other

degree courses. Among our informants many considered that their diploma had provided more clinical education than current degree courses when, in fact, the proportion of most courses has remained the same. Payne (1998) identified an ongoing need for a vocational degree which reflected modern educational policy, such that students leaving the education system were 'fitted for the job', hers claiming that a diploma course, such as existed until 1993, would have been acceptable to them. This might well serve to remind us that, as well as being of the correct standard to ensure that graduates are competent to practice, courses need to be attractive to potential students and that such attraction alters over time.

Radiographers were now required to deal with complex equipment, exercise skills and take on activities including research, none of which were deemed necessary when courses led to diplomas. It might reasonably be argued, therefore, that their learning/teaching environment ought to be one which promoted evidence based, reflective practice and continuing professional development, all of which have become features of undergraduate programmes. Challen et al. (1996) reported that radiographers had become more self-confident in their own ability to challenge accepted practices, achieved at least partially via the introduction of an all-graduate entry into the profession. In contrast, a Senior 2 in Department A felt that nothing had changed in the job to warrant the increase in educational qualifications achieved in the last decade:

> *'I can't see much difference between myself without a degree with people who have got the degree. I mean fine they've got a degree in radiography but at the end of the day it's still the same as a diploma...it's a diploma with a posher name'.*

In contrast, a colleague Superintendent 2 described her diploma radiography course as '*really basic*', explaining that she had no idea of what she was doing or why she was doing it. She described how, on her first day in the x-ray department, she did a complex

examination which she described as *'certainly not straightforward.'* Whereas current degree programmes sought to ensure that students had been instructed in appropriate theory and achieved foundation skills before undertaking examinations in clinical areas, her radiography training was *'directed'*, supporting her description of it as a *'training'* as apt description that applied to the student experiences of many other respondents. Students were regarded as part of the workforce, undergoing an apprenticeship, with teaching arranged around the work of departments:

> *'Our lectures were cancelled when the department was busy. We did all the theatre work and we ran casualty without radiographers present. That was good in that at the end of two years you produced radiographers who could go* (work independently) *but some of my year took three years to pass their exams because we had no lectures.'*

A similar observation was made by the Senior 1 at Department B:

> *'they don't treat them as members of the department* [...] *they treat them as students to be educated, trained taught and supervised which I never felt I was, when I was a student".*

The Senior 1 in Department C concurred; currently there was an emphasis on the education of students *'with a view to educating rather than supervising because they're your responsibility to do work that you should be doing.'* Students were now always under supervision by qualified staff while working in clinical areas, though this had not always been the case. The manager of Department C recalled that when he was a student he was told to do examinations and, as long as the images were acceptable, supervising radiographers were willing for students to countersign forms on their behalf. He recalled how he would be told by the radiographer *'Stick my name on it if it's a good one'*, describing the situation now as *'far tighter,'* believing the requirement to supervise students more closely was affecting their clinical education:

'I'm not sure that a graduate now could get the experience I had when I trained [...] *We used to do mobiles on our own, we used to do a screening list on our own and now because of clinical governance, risk management health & safety- you can't do it* [...] *that's pulled back what they are actually exposed to, so that's not their fault* [...] *Our supervision (of students) is far tighter now than it was but I* [...] *it lessens the range of experience they are going to get because they are more closely supervised, they don't go off to the wards and do their own things'.*

The degree of supervision that students received was dependent on their ability, experience and stage of training. Generally, first year students would undertake fairly simple examinations and be closely supervised by a radiographer, while third year students undertook complex examinations and might be supervised from a distance. But this was very different to them acting independently, with radiographers involved only with passing judgment on final images. A Senior 1 in Department B was careful to underline that for some time it had been:

'reinforced to us and our radiographers that students are supernumerary [...] *they are there to learn and to help you, not to do the work you should be doing. That didn't always happen, certainly in other departments I was aware of and it certainly does not happen now I'm sure'.*

The Superintendent 3 of Department A believed that while those who followed the diploma course had been apprentices, learning on the job, degree qualified radiographers experienced an education in radiography. This shift from being workers sharing the workload to being students present in the department to be educated had caused a culture shift for which most respondents had seemed rather unprepared.

The difference in education between diploma and degree students manifested itself not only in the way that radiographers worked but also in their involvement with continuing professional development (CPD). The same Superintendent considered

Diploma qualified radiographers reluctant to take an active part in the delivery of continuing professional development, finding them disinclined to *'talk in front of people even though they maybe an expert in that particular field'*. The manner in which the diploma had been delivered had influenced staff participation in CPD and not for the better. Students' radiography education should be assumed to have far reaching effects beyond their immediate graduate competencies. His experience of the Diploma was *'lecture, lecture, lecture-exam'* with students being *'taught to be radiographers* [...] *taught as apprentice radiographers'*. He recognised that the current climate was different: *'once you qualify you're still learning'*. My own experience of radiography education echoes this change from didactic teaching to one involving more student managed and, in some centres, largely problem based learning. Such change in content and delivery has tended to produce radiographers with different skills and expectations from their diploma qualified counterparts. The rote learning that characterised diploma courses is discouraged and, while it is no longer possible in the UK to make an accurate comparison of diploma and degree trained radiographers, in America Murphy (1990) attempted one between nurses who had completed different programmes, finding that baccalaureate nurses emerged with a stronger theoretical knowledge base and better critical thinking skills than associate and diploma graduates and would become more competent nurses over time. Such a view was shared by a number of our respondents. A Senior 1 in Department B appreciated the need for a degree course, echoing the comments of the new graduate in Department A on the desirability of 'graduateness'.

At the same time, the Superintendent 3 of Department C, was under the impression that students were *'less practical'*. He recalled his last employment solely in a clinical area in Department A where:

> *'I didn't think they* (undergraduate students) *were as practical as we were. They were much more educationalist, much more theoretical than practical. I don't think their skills were high, I don't think they'd seen as many patients* [...] *they*

didn't seem as keen on doing the practical side. [...] *there seemed to be more people who were less interested in patients, shall we say, in the patient side of it, and more interested in getting a degree. I think that's genuinely an issue people probably do look at radiography as a degree now* [...] *not specifically. It's not an easy degree and there's lot of other degrees there would have more time off from college and things I think but I think the mix did change from it. I didn't feel there was much of a keenness there was more of a "wait to be asked to do things" rather than "Can I have a go at that' sort of thing".'*

Generalists versus specialists

A Senior 2 in the same department considered his own degree education to have been '*fine for the job I was going in to*' but, while he learned how to do certain examinations, such as talo-calcaneal joints, there was never an opportunity to practice them as they were rarely requested. He had felt unable to competently perform them when required to do so after qualification. But it is universally recognised that students cannot be adequately prepared for every examination that they are likely to encounter. Those not requested very often can be taught in theory but not practised sufficiently under supervision before qualification. Radiographers continue to need to recognise when they need guidance on a particular imaging technique.

Responding to whether programmes adequately prepared graduates, our recent one did not believe anything could properly have been added to hers: *'because we learned all the general stuff and we've had basic overview on the specialist things and you know you wouldn't need any more information'.* There has long been a debate as to the proportion of the curriculum which should be devoted to what are regarded as specialist examinations in radiography. At interview all except the Senior 2 and Superintendent 3 of Department A felt that the amount of time student radiographers spent in specialist areas and their level of expertise in them when they qualified were sufficient. The former felt that students should spend less time in specialist areas, such

as ultrasound and CT and more learning general radiographic skills. Students' experiences in specialist areas were useful in making their courses more interesting and affording insight into how these examinations were relevant to patient care and diagnosis. But as with the Superintendent 3 of Department C, specialist experience was not considered vital; graduates needed to have general skills, undertaking as many radiographic examinations as possible, referred to as 'numbers':

> *'When they qualify I want them working in general. If I appoint someone and they're brand new* [...] *I want them banging the numbers through the first 18 months* [...] *all I'm looking for is someone banging the numbers through and getting competent in the department. It's like passing your driving test its not until you pass you start becoming competent'*

He did not consider it appropriate that graduates had specialist skills or experience in areas such as CT, ultrasound and MRI *'I wouldn't care if they came out with no knowledge of MRI or CT'* and not all departments would be able to offer graduates experience in these areas:

> *'I don't care whether people know about MRI; I don't care whether people know about gamma. What I would want is somebody who is interested and is looking to do the right things and wants to do them'.*

Similarly, the manager of Department C felt that the amount of time students currently spent in specialist areas during their radiography education was sufficient:

> *'I can't see anything wrong with what you* (the Department of Radiography Education) *have got at the moment. It's a similar approach to what you did when I was a student. When I trained* [...] *the 3rd year we started getting out into areas like nuclear medicine, CT, arteriograms, whatever* [...] *spending a bit more time in the 3rd year as a specialist.'*

There was, then, a strong, general belief that students needed to be *'familiar and comfortable with the basics of the job' before* they were able to understand and learn complex and specialist examinations. The Senior 2 suggested that a week in CT or MRI was too long and a few days were sufficient. However, such views were not shared by any other respondent, including the recent graduate who, nevertheless, described spending *'endless weeks in CT' with assessments in that area being largely superfluous'* as she was not going to get the opportunity to work in computed tomography for a while. The Senior 1 of Department C might have been recognizing her plight in emphasising the importance of gaining foundation skills in radiography as a qualified practitioner before entering specialised areas, suggesting that radiographers practiced for three years in general work before specialising:

> *'There's even talk when you qualify with a BSc that you come in and go straight to specials and I have reservations about that because I firmly believe that those first two years when you qualify are so important for getting your grounding that I wouldn't want to lose that'.*

He considered that the general/specialised balance of the current programme was correct, such that, if training in specialised areas was increased, other areas of the curriculum would have to be *'dropped'* and graduates would not be *'the complete healthcare professional who them gets moulded again to the specialty'.* The alternative was to extend the undergraduate programme by a year, the fourth spent learning a specialist skill, such as ultrasonography or magnetic resonance imaging. In order for this four-year programme to be attractive to students he felt it appropriate they should be appointed to a Senior 1 grade upon qualification, requiring links between higher education and the NHS to be reinforced to guarantee its acceptability and the existence of requisite Senior 1 posts

The manager of department C mistakenly believed that students spent less time in clinical than he had done and that spending more of this time in specialist areas was

not to be recommended.

> *'Students now have less clinical time anyway so to dilute that with a lot of specialties would be difficult. I think its good for them to have a taste at to what goes on in the other areas and for them to do assignments in those areas because it promotes interest as well because there a lot of different things that we do. That's part of the attraction of the job I think-you don't sit in general for ever and do these things'.*

The Senior 2 in Department A felt that as staff were staying in their specialist areas with fewer being trained there might be a need for radiographers to *'be doing qualifications in MRI or CT or ultrasound rather than training to do radiography'*, though not in CT or screening, as they were *'too closely linked with the department'*. However, later in the interview he commented:

> *'I don't think you could have people coming out of school and doing a degree in MRI or CT. I think they need to experience it beforehand and I think the only way to do that is to do it in a general department'.*

A part-time Senior 2 in the same department felt there was a place for specialist radiographers, for example, in areas such as ultrasound or radio nuclide imaging who, after successfully completing a relevant course, were qualified to practice in that area only. A Superintendent 3, also in Department A, thought there was scope for ultrasonographers, MRI technicians or CT technicians to be trained independently but envisaged a problem in getting *'value for money out of them as members of staff* [...] *in most departments* [...] *you'd probably want them also to be radiographers'*. He recognised that the department where he was employed was rare because radiographers could work in MRI and do nothing else but recognised this was not the case in other imaging departments. He thought that *'being a radiographer is still value for money within a department and the best option'*. He felt that managers would want

radiographers who could work in several different areas so that out of hours service was adequately manned. If ultrasonographers were based solely in an area, such as the ante-natal clinic, general radiographic skills would not be required. Similarly the manager of Department B felt it would be acceptable to have an undergraduate programme specifically to produce ultrasonographers competent to undertake obstetric ultrasound but did not feel this arrangement would be appropriate for general abdominal ultrasound since a greater breadth and depth of knowledge and skills were required. While students should have an insight into all specialties:

> *'people will train eventually just train as sonographers. I think just because its used so widely there will be a core curriculum course, which you may still get people from other professions as well but I think there will be a core ultrasound course which will cover ultrasound and nothing else that might be available to a range of people whether qualified or not qualified'.*

The Superintendent 3 of Department C also felt there was a place for students to be *'trained singularly'* in a specialty and not undertake general radiography education, as preferred by other informants:

> *'people who are going into specialties will be probably end up perhaps being trained singularly in those specialties Not for all the specialties* [...] *ultrasound is probably going to be carved off at some stage. I think as other things progress there will be a similar situation.'*

Department A's manager took the long view; graduates should gain experience in general radiography before specialising, spending three years on an undergraduate programme, another three to achieve a senior grade, amassing a vast *'knowledge and history of patients' treatment'*, before training for a further eighteen months or two years, say in ultrasound. Unless required to participate in out of hours cover sonographers rarely undertook general radiography, making much, if not all, of their general

radiographic knowledge and skills redundant, so that:

> *'would it not be better to have a third year point or a two year intense general one and say "Right now Joe you get exposed to these areas and you now have an opportunity to fast track into one area or another"* [...] *I think that's the exciting experiment to do* [...] *turn round and say put this person together and then in a process of assessment guide them towards a particular specialty. In an area like this* (department) [...] *yes we will always want CT and MR and ultrasound etc. but in some other cases they want generalists so I don't know how you marry those two together. This is what does worry me about not doing the general work and developing it'.*

A Senior 2 of Department C felt the amount of time he spent in specialist areas during his undergraduate programme had been sufficient and wanted emphasis laid *'on the bare bones of the profession'*, undertaking general radiography, which provided an opportunity to learn anatomy and appreciate *'how everything is put together', avoiding 'tunnel vision' so to speak'*. It would appear, therefore, that in some departments, for example, sonographers trained without general radiographic skills would have a valuable place while, in others, their lack of generalist skills would make them an impractical proposition. The current undergraduate programme did equip new graduates with specific skills which could be utilised in other imaging modalities, as his manager explained:

> *'radiographers do have an imaging awareness and ocular facility, certainly pattern recognition* [...] *all of those things which they can then transcribe onto or translocate* [...] *onto an ultrasound field and they also get a lot of patient skills'.*

The Senior 1 of Department B who considered that, in the future, individuals would be interested in training for popular sub-specialisations, such as ultrasound or MRI:

'People look at radiography and see the bits they'd like to do in the future, but don't fancy the five years its going to take them as a basic grade to get on to an ultrasound course or an MR course sub-specialty.

Loss of multi skilled practitioners would be damaging and the profession would *'fracture and we won't be the homogeneous blob of radiographers we used to be'*. Similar views were held by the Superintendent 3 radiographers in Departments A, B and C. The Superintendent in A pointed out that ultrasonographers needed to be qualified radiographers since, in the department where she was employed, they participated in the out of hours, general radiographic service. *'I suppose as a manager you would want someone who could turn their hands to most things'*. She also expressed strong views on:

'midwives and nurses doing ultrasound because although they say "We're not using x-rays" what they are not having is the background we give them as a radiographer [...] *to bring people in* [...] *to do little sections of it, like doing aortic screening* [...]. *I could teach my son to do aortic screening it doesn't make him a good health professional does it?'*

The Superintendent 3 of Department C agreed with the Senior 2 of Department B that, the organisation of employing Departments might make it impossible for graduates to practice particular specialist skills learned as students. Expectations would be unjustifiably raised if students learned about CT and MRI as undergraduates but were unable to practice after qualifying in departments which ran these areas with permanent specialist teams allowing for no rotation of other staff. For a Superintendent 3 and a Senior 2 at Department A, as well as this Senior 2 in Department B, theatre and casualty featured highly as necessary graduate skills, the latter contending that, by the time graduates used MRI and CT skills, *'things would have changed, so they're not really important'*. He felt that not everybody was suited to particular types of work and that it was unrealistic to expect students to be in a position to decide *'which area they*

are going to be skilful in at a very early stage'. Aptitude was just as important as interest for a specific specialty. '*Some people may never get the skills to work in an area* [...] *say like ultrasound but they can work really well in CT'.* Before training interest in specific skills was insufficient and less important than demonstrated aptitude for a particular area It was '*very useful*' for students to spend even a short amount of time in specialist areas considering *'It's the only taster you'll get to see if you actually want to do them.'* but not to specialise before achieving a Senior 2 post and two or three post qualification years.

Academic versus practical elements

The Senior 2 of Department A was one of fourteen informants who felt that courses were imbalanced, academic and theoretical content being too high, with insufficient time spent on clinical education:

> *'Basically I think we are spending too much time on theory and academic and not enough on actually getting them to practically work. It's definitely changed from my day when I qualified it was half and half 50% in the school and 50% in the department. We worked two weeks in each'.*

The Manager of Department C also believed that when he trained the split between academic and clinical education was '*better*':

> *'in a month we would do one week of lectures and 3 weeks in department. That's the difference I think as a split we had a higher proportion of time in the department. Radiography is a very practical job. Yes, there is the theory side which we did* [...] *perhaps not in as much detail as the kids do now, I don't know,*

The Superintendent 3 of Department C, was under the impression that students were less practical. He recalled the situation when he was last employed solely in a clinical

area in Department A, describing the students as not as practical as he had been at that stage but: *'much more educationalist, much more theoretical than practical'.* The Senior 1 of Department B conceded that it would not be possible to decrease the academic content of the undergraduate programme and *'put more emphasis on more practical'* things if students were to be sufficiently attracted:

> *'No one these days would do a course that led to a job that wasn't a degree unless they had absolutely had to. No one would do a diploma in radiography now unless there was no other alternative because however hard you try and however hard you put it a degree is acceptable and known by all and sundry whereas a diploma from the College of Radiographers doesn't carry the same weight. So I think it would be a retrograde step to drop the academic part of it'.*

The Superintendent 3 of Department B made similar comments and disagreed with some older members of his staff that the academic programme content was too high, with insufficient clinical content: 'I *think we always like to think standards were better in our day. People complain about 'A' level results in the same way'.* In complete contrast, the Senior 2 in Department A, whose negative opinions regarding degrees, academic content and entry qualifications we have already portrayed, explained that: *'years and years ago the College (of Radiographers) cut their own throats when they started making the course more academic',* unnecessarily so, in his view, since the role of radiographers had not changed significantly since he trained. Students now seemed more concerned about their academic work rather than the *'work that they are doing'.* They seemed to be focussed on their next assessment, some feeling up to standard when, in reality, they were not; *'and you feel like tearing your hair out sometimes.'* He also considered students to be less practically orientated, with their anatomy *'not being up to scratch',* probably a by-product of the modular system, unlike his own radiography education when anatomy and pathology was *'hammered into us'* which he believed *'was the only way to learn these subjects.'* He thought that students sometimes considered certain aspects of their course to be unnecessary and not all were

motivated to learn about radiography, some merely wanting to gain a degree and not work in the profession:

> *'you're always going to have some students that are motivated and some that aren't motivated. You can chivvy some along but others you've just got to let them do their own thing. We try and put a lot of input into the students here* [...] *knowing that they have to pass* (assessments) *is the incentive but if there wasn't that incentive I don't know. A very small percentage of students would just come along for the ride and not really throw themselves into it but that applies to just any students and not just radiography students'.*

The need to pass numerous academic and clinical assessments prompted the Senior 2 radiographer of Department A to note that current students did not concentrate sufficiently on the practical side of things, appeared to be assessment-led and should spend more time in the department:

> *'They have to do so many essays and dissertations now which they didn't have to do before. They don't concentrate quite so much on the practical side of things. Things like trauma, how to do things which aren't straightforward. Somebody comes in and their arm is bent in a peculiar shape so the standard projections aren't any good - they can't put it in the true PA and lateral positions - it's them knowing what to do. "How do you get around the patient", sort of thing, I think they are lacking a bit in that. I know Nancy* (clinical lecturer) *says they want to do patients that aren't straight forward but I don't think they get enough of it'.*

Such a view appeared to overlook the principle that clinical assessments are undertaken on patients requiring no adaptation of technique to ensure that students are treated equitably.

The motivation of students, then, was noted by informants in all three

departments and in Department C the Senior 1 considered that, while undergraduate programmes should include as much clinical education as possible, students' willingness to learn played a major part in maximising clinical education opportunities and their clinical learning. He considered clinical education to be vital, particularly since radiography was:

> *'a very practical job'* [...] *I'd fight tooth and nail if you tried to take any more clinical off us* [...] *if they're willing to learn then you're away* [...] *if they are good practically then we haven't got to work so hard with them'.*

He believed the clinical component of the radiography course with which he was involved to be high and *'we should be proud of that and we should preserve that'.* The Superintendent 3 of Department B agreed that clinical time was an issue but felt that clinical staff were not being used to their best advantage and some used students to *'fetch and carry for them'* He felt clinical staff should support the decision making processes of students and new graduates when evaluating images: *'radiographers should sit down with the students for an hour or so and do a brief tutorial* [...] *go through some stuff with them'.* Department B staff were working under less pressure than those of the other two departments since normally only one student at a time was placed with them so staff were in a position to become involved. At the same time, he considered that clinical skills should be taught by practicing radiographers in clinical areas since many of the academic team had not worked in radiography departments for some time.

While it was evident that respondents believed that the amount of time that students spent on clinical placement was important, it was suggested that the quality of clinical education and learning taking place was equally, if not more, vital. Spending time in a department did not necessarily mean that students were learning. Influences on the quality of students' clinical education included the practices and attitudes of radiographers towards students and relationships between students, radiographers and the education centre. Price et al. (2000) found that clinical staff did not enjoy teaching students but, when staff made time for and enjoyed teaching them, students were more

satisfied with their clinical education. Both in this study and elsewhere it has been noted that if students are made to feel 'part of the team' they tend to be more likely to take an active part in their learning, to be motivated and inclined to maximize time in a department as a learning opportunity. As Hart (1994) found, a positive relationship with departmental staff can be vital in such respects. In the departments studied here, staff treatment of students was clearly influenced by the fact that they were attending a university and receiving grants, meaning that they were perceived in clinical areas as learners and not as 'extra pairs of hands' or as destined to 'sit with Nellie'. This had resulted in clinical tutors' devolving some of their responsibilities to clinical lecturers:

> *'I think the students are a bit more molly coddled and covered a little bit more by the clinical tutors. I think they're less easy for us to get our hands-on shall we say and I think staff perhaps feel they're not theirs to do with as they want'.* (Superintendent 3 Department C)

This respondent still felt it important to retain clinical tutors who also performed other important tasks, such as organisation of prospective students attending the Department for work experience. Planning students' clinical education was vital to ensure that 'theory' has been 'covered' before 'practice'. Because of the relative inflexibility in students' clinical education staff were less likely to take control, for example when it was quiet in a specific area, in deploying students elsewhere. This Superintendent 3, in Department C, was unsure whether staff were aware what students *'are there for'*. He recalled that when he was training he was told which areas in which he would be working, depending on the needs of the department. He continued:

> *'Now because it's more regulated* [...] *I think people find it a bit more awkward to actually pull them into different areas and say "you've got to go over there" or "Can you do that?"* [..]. *What I hear from staff now is there's a reluctance because they feel the clinical tutor looks after the student and is responsible for them I wouldn't say the staff don't feel responsible for them because they work*

well within the right area but they feel they can't pinch a little bit here and there'.

The influence of clinical environments on students' clinical education might have contributed to the Manager of Department A's comment that *'each department of radiography education would produce radiographers with slightly different skills'* and that educators had a difficult undertaking trying to *'develop a creature that can go and work anywhere'*. The performance and attitudes of graduates enabled him to identify those who had qualified from different radiography education centres and undertaken clinical education in different hospitals.

There have been great similarities in debates and feelings about such matters in nursing education, well summarised in Thomas' (2003) analysis of the rationales and processes that led to the making of the first Project 2000 curriculum in 1992 in a large college, becoming part of a University setting, in South Wales and its remaking in 1997. Bro Newydd, as she refers to it, has recently remade the programme yet again, not least in an attempt to further improve balance between education and clinical experience and specialist and general preparation, as well as preparedness to practice. In school teaching, there has been a general shift away from the undergraduate forms of preparation established in the sixties in succession to Diploma courses toward one-year postgraduate entry. Under the pressure of England and Wales' uniquely centrally determined national curriculum and testing systems, the non-subject focus of pre-service pedagogy has been largely evacuated, producing a strongly competence and school based student experience in contrast to which para-medical mutual preparations often appear positively liberal and from which they would have little to learn (Furlong, 2001). What is similar is the well marked finding, from Lortie (1964) onwards, that the character of students' experience on school placements, as well as their first jobs, act to leaven and shape deeply held models of pedagogic practice based on 'own experience' of schooling.

The Manager of Department C firmly believed that the support that students

received from clinical radiographers while on placement influenced their learning. Students made to feel part of the team felt more comfortable and confident in asking questions, vital to the learning process. He had spent most of his radiography education in one department and had been regarded as part of the workforce. *'The nature of the course'* had now changed and students moved around rather more. Moreover:

> *'I like to think our department is friendly as is borne out by the student feedback that we draw the kids in, that we are welcoming that we pull them around and show them things by the scruff of the neck sort of thing and we do get them involved. They sit in the same staff room* [...] *they are involved with people. I think that's quite nice. I've been through both approaches and I think going off to your own staff room and being separate and al that sort of thing, you're not part of the patch* [...] (students) *need that support* [...] *they are better off being with the rads and seeing the cut and thrust of the staff room* [...] *everybody sits together. We haven't got consultants sitting in offices on their own, they come in and have a chat* [...] *and there we are generally lucky with our radiologists, they are a welcoming bunch. When people ask questions they get answers. There's the confidence thing'.*

The notion that the ability to ask question was essential to students' learning, particularly in respect of pathologies and evaluating images, lay behind the superintendent of Department B's observation that they needed to show more initiative:

> *'as a general rule students need to show more initiative and feel that they are actually allowed to do things and expected to do things. You can always work out what placements they've had and what places they've been without having to ask them you know where they've been. Students do resent it if they don't feel part of the team, if they're not allowed to sit in staff rooms, they can feel intimidated. If they are put in a position where they are allowed to do as much as they want then* [...] *something I do say to them on their first visit or the first day*

that they are here I tell they're here to get as much as you can. Whatever you need, whatever you want we will give it to you to the best of our ability. We don't expect you to do things if you don't think you're ready yet'.

The Superintendent 3 of Department B, who took an active part, meeting students on their first day, providing them with information packs detailing the placement and the learning opportunities available, asked them at its end:

"What more did you want out of this placement?" We're in the privileged position of having the time to do that and the space [...] *they can sit in my room without being bothered so if it goes a bit quiet they can sit in my room and have a read'.*

While some others in this department had little knowledge or involvement with students, this attitude stood in stark contrast to practice in Department A where students were placed firmly at the bottom its hierarchy, although some of its staff took more interest in students' learning than others. Department A, part of a teaching hospital and the busiest department in this study, was allocated the greatest number of students. Many staff were unaware which students were on placement, of their names, or what stage they were in their radiography education. Its manager believed that students were influenced very much by their clinical environment and that, if it was made as broad as possible, they would emerge with a wealth of experience from which to draw. The problem that he believed might arise from such an experience was that graduates might be *'very broad but narrowly trained individuals'*, though he acknowledged that radiography education departments were doing *'more than an adequate job with a very difficult problem'*. His Senior 2 was dissatisfied with the standard of radiography students. He considered that the move to increase entry requirements from Ordinary Level GCSE to Advanced Level was a retrograde step and, though he believed that entry requirements for radiography undergraduate programmes now differed between Universities, the number of students eligible to apply had been reduced. He considered

that while:

> *'nothing has changed in my job* [...] *now they need so many 'A' levels and they have to be 'A's' and 'B's' whatever* (whereas) *before you had this massive area of people who had just taken their GCSE's now you've got the shortened area of the 'A' level people. Students with ordinary level* (GCSE) *qualifications could be trained in general radiography whilst 'A' level students would become advanced practitioners.*

These views contained an interesting array of misconceptions both as to entry requirements and the unchanging nature of radiographers' jobs. The range and number of examinations has increased, as have patient expectations and courses have developed to accommodate changes in practice to produce radiographers capable of working in such contexts. It might also be argued that if diploma courses had not been superseded by degrees, students would have been more attracted to other degree courses in other professions allied to medicine, such as physiotherapy and occupational therapy already more popular than lesser known radiography. Moreover, as more students leave school with more 'A' levels than ever before, it is unlikely that increased in entry requirements that took place over twenty years ago has reduced demand for places. Indeed, as students not following a traditional 'A' level route are able to gain entry to courses via access arrangements and accreditation of prior learning, the potential pool of students has increased. The view that radiography is attracting fewer prospective students is belied by the fact that intakes have been gradually increasing over the years, the JVC (2002) reporting that the number of students commencing radiography education was at an all time high (Chapter Two). As to the general/advanced issue, it would appear that this respondent's view were out of step with a profession that now seeks to reward those in general radiography with Senior 1 posts whose skills are comparable to those specialising in areas, such as ultrasound. The general consensus of opinion from practitioners in this study was that advanced practitioner skills could only be gained after several years of general experience when

individuals were ready to learn higher skills.

One came, somewhat reluctantly on the evidence of attitudes and practices with respect of student placement in these three departments, to the conclusion that, while the breadth of possible experience available might be limited in smaller sites, depth of learning might be much greater, given that staff appeared to have more time to talk to students, helping them to consolidate learning that had taken place.

Students' Clinical Learning

The manager of Department B, as we have seen, gave students learning contracts on the first day of their clinical placement in his Department so that they knew what was expected of them and what they needed to do. He felt some students lacked initiative, the ability to think what needed to be done, which he described as different to *'not wanting to do things'*. He believed there to be a small percentage of students who knew exactly what was expected of them but, by the very nature of the fact that they were not motivated or did not feel inclined, would not do it. He considered radiotherapy students to show more initiative than their diagnostic counterparts, commenting that *'Their patient skills are better they're better motivated and they work as teams'*. Therapy treatment machines were staffed by teams who checked each other's work and had to operate collectively. The diagnostic radiographer was very much an independent worker only occasionally working in a team. It was understandable that therapy students' patient care skills were better since they were able to spend more time with patients whose treatment times were, on average, longer than diagnostic examination times. Therapy students were considered to show more initiative compared to diagnostic students, more motivated to achieve learning outcomes required of them when in diagnostic imaging environments where their time was limited. Additionally radiotherapy tended to attract a high proportion of mature students who were able to build on considerable life experience in developing confidence and communication skills. As students they tended to display greater interpersonal skills and a better

approach to learning than their diagnostic counterparts.

His Superintendent 3, as we have also seen, felt that current radiography students had poor understanding of anatomy, which was insufficiently represented in their curriculum:

> *'the last couple of students I've had their anatomy was absolutely appalling. One student in particular their grasp of anatomy was totally bizarre* [ ] *Very, very basic cross sectional stuff which I would have thought a student would come up with* [...] *like where is the rectum, we had kidneys in the chest, something as bizarre as that, it really was. It was clearly a one-off but I don't know how you teach anatomy these days. We were very much rote taught in a sense'.*

He felt there was a case for anatomy being taught as a single subject, rather than applied. The single subject method had occurred in the Diploma where students learnt anatomy during their first and technique in the second year. Currently much of the radiography syllabus was integrated, with anatomy, radiographic imaging and pathology of that particular area being taught at the same time. It was assumed that if students were taught anatomy illustrated with radiographic images they should be able to recognise normal and abnormal anatomy on images in clinical areas. Such pedagogy might be faulty, badly delivered or perceived as lacking in relevance by students selecting to learn only those topics they felt likely help them achieve examination success. As the superintendent suggested, the student to whom he referred might have been a 'one off' but it was disquieting that with greater use of CT and MRI any student could not recognise anatomical features on a cross sectional image.

Curriculum Content

While the *Curriculum Framework* (College of Radiographers, 2003a) offered guidance *qua* illustrative content, those working in clinical areas universally regarded

themselves as best suited to determine specific details of subject matter. While respondents were in agreement that students should receive a general radiography education, with insight into specialties, from which most of its content would flow, there were greater differences when they came to consider the specific content of other, some would say more peripheral, in some respects future-oriented, in others rather backward looking, aspects of the curriculum. Selected areas of contention are illustrated below.

Management

The recent graduate employed in Department A considered there were some elements of her course that could have been omitted or reduced:

> *There was a lot of time spent on things I'm never going to use. I'm never going to go into ultrasound and we spent months learning the theory* [...] *I'm not expecting to go into management to manage a department or even manage a room. If I'm going to be a manager it's going to be 20 years time so I do think it was a waste of time'*

The Senior 2 from Department C echoed her sentiments. He considered management to be unnecessary in the undergraduate programme; it was *'something which comes along many years after you qualify'* for which a dedicated qualification was required. The Superintendent 2 of Department A also felt it inappropriate to include management as an undergraduate subject, though choosing the right management qualification *'later'* did seem to be a problem. In contrast, the manager of Department C, who had gained a general management degree rather than one specific to radiography, saw opportunity for staff to *'go down the management route'* after they had been qualified for a couple of years so that, although students might not see its relevance until later in their career, management should be included in the undergraduate curriculum Given that all the managers in this study felt ill equipped for their role, it would seem that application and

practice of management skills in radiography settings might be more appropriately emphasised than the theory based management of the current curriculum. Most radiographers were required to exercise some management skills in a room or area, certainly at Senior 2 level, if not before, a good deal more quickly than that envisaged by the new graduate, above. The Manager of Department B also expressed uncertainty as to the relevance of current, undergraduate management topics, while considering it useful for students to have an insight into issues that managers had to consider *'like what do they think of the new budget and other management issues that you have to take on'* She noted that during meetings in her department, staff *'come up with ideas* [...] *which are clinical, hands-on orientated* [...] *rather than management* [...] *so I can understand them* (the students) *saying they feel that there's no need for it'.*

Ethics, medico-legal, CPD

Ethics and an understanding of medico-legal issues were considered more appropriate than management by the Senior 1 of Department C. In recognition of the added pressures that radiographers were currently working under he suggested that emphases of certain topics/subjects could be changed, reducing the amount of anatomy being taught so as to enable an increased emphasis on them, a move, as we have seen, would not have been welcomed by a superintendent from Department B. Management, audit, clinical governance and CPD were all considered worthy of inclusion in the undergraduate programme by the Superintendent 3 of Department A. CPD was specifically relevant, since those qualified with diplomas had *'done anything whatsoever to push themselves or the profession as a whole'.* The College of Radiographers' *Statements for Professional Conduct* (2002) had set out responsibilities with regard to CPD, laying down that, as well as undertaking life-long learning, radiographers were required to maintain and strive to improve their professional knowledge and competence and keep a record of their on-going development activities. Registration with the Health Professions Council would come to depend on evidence of CPD and, though not deemed compulsory, many respondents evinced a knowledge of

this prospect.

Pattern Recognition Skills

Though the Senior 2 from Department C felt that generally graduates possessed requisite skills and qualities, there were some areas which required expanding:

> *'I would like to see them doing more work on the red dot side of things and the mechanisms of trauma. Most departments are running red dot scheme* [...] *I think it would be a good idea if the radiographers improved their knowledge on reading of plain films.'*

The Senior 2s of Departments B and C were in agreement. The former felt 'red dotting' could be included in the undergraduate programme, although reporting skills might be too advanced, *'that's something that comes with experience'*. The Manager of Department C likewise felt that *'red-dotting', looking at fractures, pattern recognition and report writing'* should all be incorporated in the undergraduate programme, his Senior 2 commenting that:

> *'the future lies with* [...] *reporting and red dotting. The radiographer of the future needs to be exposed a bit more to that side of it. I think although it's probably an 18month-2 year course just* [...] *.getting your self to report* [...] *it's a huge area you couldn't obviously do it all but just a taster, the basic side of that'.*

As we noted in Chapter Five, red dotting has certainly found a place in accident and emergency units, though reporting, taking radiographers into traditionally radiologist-led territory, has been slower to develop. Though as far back as 1989 Price announced that radiography degrees were to be the basic qualification and predicted that fracture reporting might become part of the daily work as a radiographer, sixteen years on this futuristic view has only partially been realised in radiography curricula. While students

have been taught to identify abnormalities on images and these skills consolidated on clinical placement, there is generally insufficient time under present arrangements for students to gain relevant experience or achieve competence. One might add that before radical changes are made to the radiography curriculum along these lines, clear need for these skills should be identified, along with acceptance by radiologists and radiographers that new graduates will be able to practice them. Moreover, dilemma could arise if they were awarded a higher salary in recognition of these additional skills, as already occurs in some areas, enabling newly employed individuals to earn more than experienced, serving colleagues with lesser personal accreditation. The Senior 2 of Department B counselled caution, supporting radiographers 'red-dotting' but expressing reservation as to reporting skills being included in the undergraduate programme. It would:

> *'not be a good idea* [...] *a lot of radiologists are against it so I think it's not practised in several departments so if they are going to a department where it's not practised then the skills are lost.'*.

At the same time it could be argued that the presence of many radiographers graduating with reporting skills would tend to pressurise radiologists into allowing them to expand further into this area. We saw in Chapters Five and Six that reporting was the focus of most comment when our respondents were asked to discuss and problematise their 'role development' activities against the background of the College of Radiographers (1997) setting out of its conditions that reports should respond to questions posed on request forms, describe image appearances and discriminate between normal and abnormal and radiographers would consult radiologists if abnormal image appearances were complex and medical interpretation likely to be difficult. We also noted Price et al (2002) as pointing out that, with the exception of ultrasound, reporting was the least frequent role development activity undertaken. Indeed, we contended, it represented the sharpest pinch-point of conflict over power and control between the two professional groups. In the light of criticism of current students'

knowledge and understanding of anatomy (evidenced above by Superintendent Department B), his Senior 2 colleague noted that if graduates were to be required to have reporting skills, it must be ensured that they also had:

> *'good understanding of anatomy. The way you write it is important but I think you have to know normal anatomy really well first. Radiographers should be able to look at films, that is, identify abnormalities.*

These skills would require students to recognise 'text book' and 'cadaver' anatomy presented as two dimensional, cross sectional and occasionally three-dimensional images.

The Senior 2 of Department C thought that understanding the mechanism of trauma was important for the development of 'red dotting' skills:

> *'I went on a course this week and I didn't realise how important the clinical details of the mechanisms of trauma were. I just found them very useful. What is written on a request form* [...] *how the patient injured themselves, is very relevant in spotting things and looking at various things. I found it quite fascinating.'*

If, as is predicted, identifying abnormalities and reporting on images is going to become normal, future practice for radiographers, there is a case to be considered that such knowledge should be added to the curriculum.

Research Skills and Audit

Very little was research being performed in clinical areas by practising radiographers, bringing into question its inclusion in undergraduate programmes. Only eight of the thirty-eight clinical radiographers who responded to the questionnaire had

been, or were, research active. In 2002 Williams highlighted that research was not an activity that diagnostic radiographers undertook routinely, despite the considerable amount of literature published on the theme (Paterson, 1994a; Hammick, 1995; Challen et al., 1996; Williams and Berry, 2000). Nixon (2001) recognised that radiography's knowledge base was largely built on research undertaken by medical practitioners and physicists rather than radiographers.

A Senior 2 in Department B nevertheless considered research and the dissertation to be an important element in radiography education, claiming that *'if you want to do an MSc or whatever then I think it's important that you have done that so you have some background'*. It could be argued that the motive for developing research skills as an undergraduate should be much more fundamental than the desire to '*do an MSc*'. If they are to compete with radiologists and be recognised as evidence based practitioners, radiographers, arguably, need to be research active and questioning of accepted practice. Research and audit have similarities in that they both can be used to review common practice. Audit is an activity common to all radiography departments and, recognising its' importance, the Senior 2 from Department B felt it would be useful to include it in the radiography curriculum *'because as our profession is developing we end up doing more audits'*, explaining she had set up an audit in her place of work and *'auditing plays such a big part in a radiographer's daily role now'*. The Senior 2 in Department C felt that audit and quality assurance were far more relevant to the practising radiographers than research:

> *'I think audit QA* (quality assurance) *and things like that are coming more into it. It's useful to know the basics of research* [...] *to know how to write it up I think there's an emphasis on the quality side of things with the White Paper and I think if they can understand audits then that would be useful. I know I've had to do audits and previous research has helped me but other than that there's not much research going on* [...] *unless its radiologist led and then there's not much happening'*

If, as the manager of Department A predicted, consultant radiographers were to become clinical leaders, they had to establish research credibility in an evidence-based profession. According to Kelly (2002: 10) research and clinical governance can be considered to be inexorably linked:

> 'The basic premise of clinical governance is that healthcare professionals actively and directly participate in the regular review of the quality of services they provide and in planning ways of improving them'.

On this view radiographers need to disseminate best practice promptly and efficiently in order to improve standards. Halligan (1999) described clinical governance as a cultural shift challenging individuals to share best practice with colleagues as quickly as possible. Yet, despite the importance of clinical governance in shaping radiography practice and its prevalence in imaging departments, only the Superintendent 3 of Department A mentioned it as worthy of inclusion in the radiography curriculum.

Physics and Equipment

Five respondents thought that graduates should have more understanding of how equipment worked, possibly another example of old memory-traces firing in an era where most of it is now electronic, informs the operator of malfunction and of when engineers need to be contacted for repair. Since equipment was being constantly updated, any radiography curriculum in this respect would have to be flexible and adapt to change, a Senior two of Department C who had been qualified for three years commenting that *'sometimes I think of the vast amount of physics and how an x-ray machine works and how to fix it* [...] *I just think it's a little bit sort of dated.'* However, the manager of Department C felt that undergraduate education should prepare for how to cope with eventualities, such as machinery breakdown in the middle of the night, enabling them to cope with equipment malfunction by adapting technique or knowing

the correct procedure to follow, rather than imagining that they would be able to effect repairs. At the same time, a Senior 1 of Department B questioned the equipment content of the radiography programme, emphasising that all a radiographer needed to know in the event of equipment malfunction was:

> *'It's not working, call an engineer. We did physics and equipment and nobody cares* [...] *nobody knows how it works these days and to a certain extent there's a lot of things you don't need to know and so much of it is automatic and out of our hands and software driven which we have no control over that there's no point in learning.'*

At the same time an element of understanding must be included so that radiographers might successfully manipulate equipment. For example, when adjusting exposure factors, an understanding of the effects on the image of increasing kilovoltage would contribute to the selection of the most appropriate factors. Quality control, quality assurance and planning for and procurement of new equipment were appropriate areas within the curriculum framework.

Nursing Experience

The Diploma of the College of Radiographers had required students to undertake what was called 'ward experience'. The objective of this part of the curriculum was somewhat unclear at the time but it was used to develop nursing skills, such as taking temperatures, blood pressure monitoring, pulse rates and general care of the patient, as well as providing opportunity to improve communication skills. Additionally, in imaging departments students used to set up sterile trolleys containing instruments and equipment necessary for specific examinations and assisted radiologists in associated sterile procedures. Since the advent of degrees in radiography, most Departments of Radiography Education have omitted ward experience from their curriculum and sought to achieve such skills as they felt

appropriate by other means. The curriculum has also been adapted to cope with changes in practice, such as a reduction in the number of interventional techniques and use of disposable sterile packs, combined with increased use of CT, MRI and ultrasound. The time allotted to these 'nursing' activities in academic and clinical environments is now greatly reduced. However, recent officially inspired directions in 'role development' and skill mix within radiology departments could see re-emergence of these skills in undergraduate radiography programmes.

The Superintendent 3 of Department C felt that, while he had enjoyed his time on the wards during training and found the experience useful, he did not feel it a vital element of the undergraduate programme:

> *'The wards were my favourite week of training I think* [...] *I wouldn't say going on the wards is a priority for someone coming to train* [...] *I got loads out of it. I mean it really depends where you were. The ward I was on, men's urology* [...] *the staff were just superb.'*

The experience of student radiographers was dependent on ward staff's commitment and enthusiasm. The Superintendent of Department C likened the value of a ward placement for student radiographers to that of school children on work experience:

> *'the wards they're going on are totally dependent on the ward staff because some are really interested and really keen and others* [...] *the kids were being sat in the relatives' room for the week because the staff won't have anything to do with them and are not interested in doing anything with them. So you've got to be careful about how and where they go I think'.*

The use of ward placement was considered by this superintendent as a way of improving communication skills but was very much dependent on commitment of the ward staff, *'an environment for chatting which is important, social skills are really*

important because I was incredibly shy as a student I was very quiet.' Similarly a part time Senior 2 radiographer at Department A felt that ward experience of one or two weeks at the beginning of the course was useful for students in gaining patient care skills. It was useful to *'know what goes on'* on the wards, enabling radiographers to gain a better appreciation of how other areas in the hospital worked and, according to the Superintendent 3 Department B, promoting interprofessional working. If time allowed, he considered ward experience should be re-introduced into the curriculum as it provided other useful experiences. These were noted by the Senior 1 of Department C as being as mundane as:

> *'holding syringes for doctors while they took blood, taking out bed pans, making beds, being part of a team, being part of an overall set up even though it wasn't what we were going to be doing a lot*

The Superintendent 3 in Department A believed:

> *' it makes for a better team, it makes it more efficient and it makes our job more fun* [...] *I think that's why our department fails in that we've got loads of nurses* [...] *they don't have nurses at Hospital Z so any specialist procedures the radiographers have to know what to do'*

She felt that certain nursing duties, such as the preparation of sterile trolleys for invasive procedures should be included in undergraduate programmes and considered the time students spend working with nurses in the department to be insufficient. She had 'set up' a sterile trolley with a recently qualified radiographer who, she said, thought it was *"wonderful"* because the opportunity had not arisen during his radiography education.

However, there was general appreciation that, in order to introduce other vital elements into the curriculum, ward experience had to be omitted, even though, as the

Superintendent 3 of Department B had considered as a student, it was '*good for us as students to get to grips with communicating*'. He felt the experience had been worthwhile because:

> *'it had quite an effect on me I must admit I was more appreciative of what other people did. I think again in radiography or radiology whatever we can be very isolated. We think the x-ray department is the hub of the hospital in fact it probably isn't it's just a huge machine. In that respect we're quite arrogant because people come to us and ask us to provide a service and there are other people that should be recognised and valued and we need to see what other people do to appreciate how we can fit into it.'*

However, given shortage of nurses and the need to improve skill mix in departments perhaps there is a need to re-introduce this so-called nursing element into the curriculum. On the other hand, if radiographers move into previously radiologist-led areas, such nursing tasks would be likely undertaken by assistant practitioners, as was already occurring in Department C. In this department, the Senior 2 thought some nursing skills should be included not only because radiographers should be able to monitor patients in their care but because wards were frequently unable to send qualified staff with patients attending for x-ray. Increasingly, student nurses and nursing auxiliaries, inexperienced and unable to observe and provide adequate care safely were accompanying patients so that radiography helpers were performing what were traditionally nursing tasks.

Respondents also offered views that had little place for time spent nursing. The Superintendent 2 of Department A had '*hated every minute*' of her experience on the ward, although she felt it gave her '*some idea of the ward routine.*' A Senior 2 in Department B, five years post graduation, had never practiced nursing skills learned during her radiography education and did not feel it appropriate that they had been included in the curriculum:

'I've never taken anyone's blood pressure. If you have any worries then we ask the nurse to do it because they do it all the time so they are far more skilled than we are. They are far more efficient than I would ever be at doing it. So as part of the radiographers' role [...] *should it be included in the course?* [...] *I don't think so'.*

The Senior 2 of Department C supported this viewpoint, recognising that some elements could also be reduced, *wanting 'less on the nursing side of things and more on the radiography aspects.'* A Senior 1 in Department A considered that student radiographers needed to get a perspective on their own profession before trying to understand others. She questioned the validity of students spending time in other departments an exercise, which she believed was aimed at gaining insight into the roles of others in the healthcare environment. Students early on in the course could not *'see the wood for the trees* [...] *you don't know why this is different to a radiographer's job because you don't yet know what a radiographer's job is.'* Perhaps there is greater purpose to including an element of working in other departments during students' final years, perhaps as part of their elective period. Unless skill mix and 'role development' decisions require major changes in radiographers' roles, there seems, on balance, to be neither demand nor necessity to re-introduce nursing skills into the curriculum.

Injecting

As we noted in Chapter Two, there has been a marked increase in the number of radiographers injecting, the first and the most widespread 'role development' activities, according to Price et al. (2002). Both the Superintendent 3 radiographers at Departments A and C and the Senior 2 at the latter said that they would like injecting skills included in the undergraduate programme:

'Injecting I think is becoming a routine. We had radiographers who trained last week to inject and they've only been qualified less than a year. If that's going to happen then they might as well do it properly and do it as part of their degree.'

(Senior 2, Department C)

Injecting is used in radionuclide imaging, intravenous urography, CT and MRI. Traditionally performed by radiologists, radiographers spent a considerable amount of time (and still do in some departments) looking for them to inject and supervising patients post injection, as necessary. Where they are trained to inject, examinations are quicker and simpler for patients and radiographers but such training has always been an issue and variable between departments, despite attempts by the College of Radiographers to make their injecting programme the 'gold standard' in imaging and education departments.

Superintendent 3 of Department A questioned what his local Department of Radiography Education was doing to develop radiography, commenting on the feasibility of students graduating with intravenous injecting skills:

> *'I think things like injecting should be part of the course. A radiographer coming out of College as well as the normal radiography qualification whatever that should be* [...] *should be equipped for doing those fundamental tasks within the department. I see injecting now as something that everybody should be able to do* [...] *without a shadow of a doubt.'*

He recognised problems with keeping graduates' injecting skills up to date in Departments where it was not possible for them to practice their skills and had experienced difficulty in finding an injecting course on which to register and was trained by radiologists in the Department. He commented:

> *'I think it would be a good thing to include injecting in the undergraduate programme* [...] *some of the radiographers went to the phlebotomy department...that could be something you could use for the students to practice'.*

Similar comments were made by the Superintendent 3 radiographers of Departments B and C regarding intravenous injecting. Department C had just trained five staff to inject who had been qualified a year. He felt it more appropriate that students graduated with injecting skills particularly since in Department C staff were likely to be required to work in CT *'fairly quickly'* and would *'certainly be rotated through IVU's'* which would require them to use injecting skills for these areas to operate efficiently:

> *'to be consistently going searching for someone to inject is just a waste of time. You've tied up two radiographers for half the morning, one doing IVP's (IVU's) and the other nipping back and for to supervise and inject.'*

The Superintendent 3 of and Senior 2 of Department B considered injecting skills to be *'easy to lose'*, making it essential that graduates learnt them in the final year of their course and were able to carry on practicing them in their first post. The Senior 2 considered it *'useful'* for students to graduate with injecting skills but had concerns whether this could be included in an already packed curriculum. The Superintendent 3 of Department C suggested that students should qualify with a certificate of competence in injecting skills, similar to the manual handling passport.

Communication Skills

The Manager of Department C considered it essential for graduates to be able to deal with patients' complaints, while the Superintendent 3 of Department B believed that little could replace experience in that respect. The skills required by radiographers and students with patients attending Department B were quite different from those appropriate to other departments:

> *'You've got to be so careful what you say to patients and how you say it. Patients hang on your every word.* [...] *They look for every subtle nuance in your body language in what you say, how you say it and to get that across to a kid*

straight from school or event o a kid on a two week placement [...] *its too big a leap to expect them to make from being in casualty where you've got patients and you'll never do that patient again to a patient who is thinking has my tumour got bigger, has it got smaller? Will I see my grandchild grow up that sort of thing. I think the older you get the more you appreciate how life is precious but if you're straight from school, you're not going to die, you're going to live for ever and ever. Sometimes they find it hard to pick up that subtlety.*

These specific skills were often particularly difficult for young students to acquire and display and easier for more mature ones whose experiences had provided them with appropriate interpersonal skills. Good interaction with patients was integral to each patient episode, so that he felt that communication was an important part of the curriculum so that staff and students might appreciate the impact what they did and said could have on patients. He suggested that communication skills should be taught not just at the beginning but also at the end of the curriculum because:

'by that point, they'll partly realise if they do get it wrong the fact that that patient will go home and will worry about things [...] *down in clinic the medics will offer tape recordings of consultations knowing full well that the patient will only take in a certain percentage of what they say to them and again I think you're trying to get across to the student that what they say to them has got to be relevant there's no point bombarding them with stuff they don't really need to now. It comes out of experience they're not going to know what is the important bit and what isn't the important bit*

He also thought that perceptive students would be able to distinguish between those patients who did and did not want to talk. The Manager of the same department felt that students might need more practice in communication. While none of the radiographers she employed were newly qualified, she felt that they still had not gained enough experience to communicate effectively and talk to patients at the appropriate level. This

might have been because they were degree students, whose current curriculum lacked communication skills, meaning that they required more practice in being able to decide what should be said to specific patients and at what level this should be pitched. Patient episodes tended to be longer than in some of the other departments making requirements of effective communication different. . Most students' clinical education took place in a District General Hospital where patient episodes are generally short *'they're in and out and that's it'*, which explained why their communication skills were inappropriate.

Since ability to communicate was important it was normal to interview all radiography students. Nevertheless, the Superintendent 3 of the same department considered counseling, listening and communication skills a necessary addition to the undergraduate programme, recognising that to make additions to it meant there were elements that would need to be omitted, so long as they were not basic imaging skills since *'they've got to learn the nuts and bolts before they do the more specialised stuff.'* A contrary opinion was offered by the Manager of busy Department A who noted that graduates displayed good patient care skills:

> *'There's always the old waving of the shroud about, "They're too academic"* [...] *I don't think that. I think once they get over that first year post qualification I think they actually develop* [...] *a lot of them are very, very good* [...] *I think they are very orientated towards patients.'*

Other issues

Among other comments made regarding curriculum content, the Senior 2 of Department C, reflecting upon her own preparation, felt that:

> *'I think the principles of practice was most important, anatomy was second to that and the health care studies where you're learning how to work within the*

hospital, I think that's important as well'.

Principles of practices involved how to undertake imaging examinations and, since it was the basis of radiography practice, it was unsurprising that it was felt to be appropriate for inclusion in the curriculum. A Senior 2 from Department B considered that her radiography education had lacked experience in mammography as she needed those skills once qualified. She was able to observe examinations but found this awkward, considering the area to be one in which it was too sensitive for students to practice. A Senior 2 in Department A believed that his training had been adequate, except that the photography was not now relevant in his digitalised department. Moreover, students tended to be placed to work in an area, such as the chest room, without having covered the anatomy and physiology of the chest. While it was recognised that the clear intention of the radiography education centre was that students should receive relevant theory and background knowledge before attempting to gain practical skills in a particular area, it would have to be conceded that this sometimes, inevitably occurred because their numbers exceeded those of relevant placements and compromises sometimes hd to be made

The Senior 1 of Department B recognised that image manipulation was a relatively new but important part of radiographers' work, commenting:

'We have to move our course in line with that sort of technology. OK assess an image but perhaps we should be looking at how they manipulate an image because that's what we do. It's hard to get your head around it.'

Although not happening 'very often,' he went on to describe how a radiographer could give incorrect exposures, giving patients high doses, yet processes of manipulation would present images of correct density and contrast. Since most equipment was now touch screen it was relatively easy to hit incorrect keys, giving wrong exposures. Students' clinical education needed to include a placement where equipment allowed

manual and automatic exposure setting to ensure that they were adequately prepared to work in a variety of settings post graduation.

The Superintendent 3 of Department C suggested that students should qualify with a certificate of competence in IRMER which stated '*"I am trained to a standard and am now competent doing this."*' though he recognized there would always be local rules and induction requirements. The inclusion of learning about the use and application of incident forms in the undergraduate programme was considered desirable by his manager. They were, indeed, included during year one to ensure that students knew procedures to be followed following incidents involving patients, staff members or the public.

Graduating Radiographers

Participants were asked their opinion of graduating radiographers. The majority was satisfied with their competency and recognised that their confidence had increased over the years. Several were concerned that graduates were '*academic*' and did not have the aptitude to deal with situations which were unusual or which required problem solving skills. However, the Manager of Department A was eager not to generalize. He remarked that every year graduates were slightly different, a situation he recalled when he was in education:

> *'you'd have one year in that everyone was great and you'd get another year and for whatever reasons it didn't gel so from a personality point of view you've got to try and divorce that. I would say that last year's out-turn was an extremely capable and extremely able group of students and that also applies to people who came to us from elsewhere. They are very, very good.'*

As the manager of the largest radiographic workforce in Wales it can be assumed that he would have valuable insight into the suitability for employment of radiography

graduates. He had no time for the issue of students being *'too academic'* raised by the Senior 1 of Department B (who also, somewhat paradoxically, felt that to reduce the academic content of the course would be take away its eligibility for degree status) and was unworried by the putative dichotomy existing between academic and the practice settings explored by Baird (1996), who had contended that integration of academic knowledge with practical know-how had been attenuated by the introduction of degree level education and reduction in the time devoted to clinical practice. On the issue of insufficiency of time allocated to clinical education, raised by several participants, he took the view that it did not appear to influence graduates' practical abilities, describing them as *'clinically competent, aware, challenging and non democratic staff in the sense they are quite far more self orientated than they were before.'* The Manager of Department C agreed, reporting that graduates he had employed recently had all done well; some were far more confident, had *'developed fine'* and were entering specialised areas within the department and contemplating undertaking further qualifications. He did, however, make clear that newly qualified staff were treated as probationers, not undertaking on call until they had been qualified three months and had done mobiles and theatre. This arrangement was influenced by the requirements of the IRMER inspectors:

> *'So we give them three months before we put them in on call and we make sure they have done theatre and mobiles on their own. And literally that they've actually done the job a little bit more before we let them loose on call.'*

This extra time to practice was necessary since, when on call and in theatre, graduates would have to undertake examinations 'single handed', that is, with no other radiographers in the immediate vicinity. The newly qualified radiographer in Department A felt equipped to commence on call, having had experience in two general imaging rooms and spending a month in fluoroscopy, with two weeks in accident and emergency:

'I felt really prepared because other friends in other hospitals were doing on call within the first month and I thought "Oh my God, I couldn't do that" It was like three months before I did on call but I felt really prepared and OK about it. I wasn't ready any earlier and I wouldn't say I was overly confident but at the time I thought OK and that I could struggle through and I'm happy doing it now.'

Williams et al. (1997) found that newly qualified staff required considerable support to achieve what was expected of them. Additionally, when determining if they were competent to practice, they frequently mentioned that the watershed was the ability to undertake on call duties, generally accepted amongst radiographers and found by this study to be common practice.

While some radiographers in this study considered that graduates needed a few months to become competent, others, such as a Senior 2 of Department C, considered it took two years for them to become so in general radiography. The Manager of Department B held a similar view. She did not employ 'new graduates' at all, feeling they were unable to cope with the terminally ill/cancer patients examined in the department and insufficiently experienced to work on their own in imaging rooms, as necessitated by the small number of staff employed. More recently, benchmark statements produced by the Quality Assurance Agency for Higher Education (2001) indicated the standards expected of diagnostic radiographers, describing the attributes and capabilities that those possessing the BSc in diagnostic radiography should demonstrate. While it is too soon to gauge the impact of benchmark statements on the outcomes of courses, undergraduate radiography programmes reflecting these statements should produce those able to practise safely and independently (Quality Assurance Agency, 2001). It may be worthwhile considering whether a preceptorship grade should be established, as defined in the Department of Health's (2003a) four tier structure and Kimber's (1998) suggestions for a pre-registration year. If adopted, the extension of radiography programmes to four years, in the judgment of many of our respondents, could have negative effects on recruitment. As the competence of those

newly qualifying does not appear to be causing more than grudging concern among the few, it would seem that the status quo could remain until quality assurance mechanisms in radiography departments indicate otherwise.

Understandably, qualified staff and particularly managers were more interested in the clinical ability of new graduates than the classification of their degrees:

> *'I am not sure how much they appreciate how much their clinical work is because that's what they are going to be valued on when they come out* [...] *is what they can do. Are they aware of that? I don't know. People might be impressed* [....] *generally radiography managers don't care whether you've got a 1st , 2:1, 2:2 or a 3rd, it's how you do the job. I am not quite sure where that sits. There's a dilemma, because we're working hard to get a higher degree but what it actually means once you're working, I'm not sure because really we want radiographers who pass the degree to come out and do the job.*
> *(Manager, Department C).'*

Graduate Communication Skills

Unlike the Manager of Department A, the Senior 2 of Department B, where all staff recruited were graduates, though not recent, from the same education centre and were regarded by their manager as *'fine'*, reported that some of his colleagues found that students did not interact well with patients, although he had no experience of this himself. He did believe, however, that radiographers' potential to interact with patients had been largely diminished

> *'the profession is changing in that patients who come to the Department they're here for 5 minutes and then they're gone whereas years ago. I think you got to know the patients better they were here longer. A CT scan took half an hour 10 years ago. Nowadays it takes 2-3 minutes. I think the patient aspect, the*

interaction with the patients, has largely gone.'

Technology had shortened examination times for many radiographic techniques to fractions of their previous durations, particularly with the advent of digital technology and, with their ever increasing workloads, radiographers did not have the time available to converse with patients or to allow them to wait in examination rooms while images were processed. Students needed to practice in order to develop their communication skills, in which role play and practical sessions could help, though they were no substitute for real life episodes in clinical settings. Williams and Berry (1997) contended that effective communication relied on establishing effective relationships and interprofessional communication and remained an important attribute of clinical radiographers. Similarly, the College of Radiographers *Curriculum Framework* (2003a) recommended that to collaborate and negotiate safely, effectively and sensitively in a professional manner with others should be included as an aim in the radiography syllabus. A Senior 1 in Department B had little experience of newly qualified graduate radiographers but likened them to third year students. He attributed their lack of confidence to the fact that the current radiography education programme required students to spend time in several different departments in order for them to gain experience in a wide range of examinations while, formerly, students were more confident, since most of their radiography clinical education was spent in one department. The students that this Senior 1 would have encountered would have almost certainly been on their first and potentially only placement in the department, which was used only for students to acquire specific skills over a period of two to four weeks, giving little opportunity to establish confidence in this new environment. The notion that students spending time in a variety of placements became more confident, since they would have had opportunity to adapt to several different situations, seemed not to figure in his judgement.

The Senior 2 of Department C argued that this ability to communicate well with patients and other health professionals was needed by the radiographers of today

since,

> *'someone who is a people person and can interact with patients and staff- obviously quite a strong personality these days with IRMER coming in it's creating more conflict between us and the referrers* [...] *we seem to be arguing with doctors and referrers a lot more. You need quite a strong personality for that.'*

Confidence in communication was entailed if graduates were required to discuss with clinicians the relevance of and need for their imaging requests. Lack of confidence among graduates was not the experience of the Senior 1 in Department C and the Manager of Department A who described them as being *'less respectful of the hierarchical system'* since they did not perceive difference in the way different grades of radiographers should be treated by more junior members of staff. This Manager believed it to be a reflection of social and cultural changes taking place and suggested *'I don't think it's respect, I think they are more able to challenge.'* He attributed this attitude and ability to challenge to changes that had taken place generally in society, likening it to his own attitude in the sense that he no longer respected the medical profession in the way that he did many years ago. However, it was recognised by a Senior 1 from Department B that such confidence should not be misplaced:

> *'I think they have to be confident in their own abilities to know what they can do and that they can do it well* [...] *they must know their limitations and just be eager to learn the rest* [...] *when I first qualified. I didn't know when to say "No I don't know what I'm doing or I need help" and that was a mistake I made and it didn't take me long to realise that I did have limits.'*

Recognition of limitations should enable graduates to identify continuing professional development needs, opportunity to meet which the Society of Radiographers (2002b) suggested was a major factor when they were seeking employment. The Senior 1 in

Department B also felt it important that graduates continued their radiography education and developed their roles once qualified:

> *'once you get out of the habit of learning its very difficult to get back into it and I think anyone who has tried to do a conversion course for a proper full academic course a number of years after they've qualified they've found it really hard and just the discipline of studying is hard work. Whereas if you continue to develop it's a lot easier.'*

I can attest to the experience of having graduates who have accepted posts because of incentives offered, such as enrolment on an MSc or training in ultrasound. The Superintendent 3 of Department B felt that since the introduction of a degree in radiography graduates have been more ambitious than their diploma trained counterparts, while the Superintendent 2 in Department A explained how she found it difficult to deal with those with over confident attitudes, preferring nervous ones:

> *'"We have a degree. We know everything there is to know about radiography. We now want to move on." I found that difficult! They've been nervous* [...] *which I prefer. This might sound strange but I prefer someone who isn't quite sure and who thinks I've got something to learn here but someone who comes out and says well "I've done that and I know it* [...] *I have a degree in radiography I know it. Now I want to do CT, MRI. and ultrasound." '*

She went on to joke about:

> *'Jack, for example who isn't one of your students but who came along after two weeks and wanted to do the red dot reporting course. Well, (laughs)* [...] *I think it is difficult to get the balance right there.'*

While she complained that students were over confident and enthusiastic, others in this study bemoaned them as unenthusiastic and lacking initiative, as was seen to be the

case in general among young people and not just radiography students. Are confident graduates a product of our undergraduate programmes? Are such comments, made by some individuals, unwarranted generalisations, unrepresentative of radiographers? Could it be that this superintendent and other diploma qualified radiographers still felt somewhat threatened by their no longer particularly new, graduate counterparts? If the latter is the case then it seems that it has more than a little to do with new graduates' desire to progress quickly, as identified by the Manager of Department A and recognised by the Senior 2 radiographer in Department C:

> *I think the attitude is different in the sense that they want to do other things straight away. They want to progress straight away. When I qualified it was generally accepted that you wouldn't get a Senior post for two, three or four years and where as now with link grading coming in they are looking to be upgraded within 12 months. The attitude has changed in that they want to progress quicker. They expect to. They are progressing quicker. People are encouraged to apply for an upgrading here after about 18months-two years where as in other hospitals they have actually brought in link grading. Where as they haven't actually brought in link grading here people have been encouraged to apply for an upgrading.*

He felt that the desire by managers to upgrade staff more quickly then in previous years was led by a desire to retain them and *'whether this would happen when we are fully staffed* [...] *I don't know'*. Staff shortages have enabled radiographers to be more mobile, moving to departments which suit their requirements, able to provide them with specialist experience they desire. In order to attract and retain staff departments have offered 'role development' opportunities, including those to train for specialist areas and gain further qualification. The eagerness for graduates to develop and enter specialised areas, highlighted by the Manager and Senior 2 radiographer of Department C, was echoed by he Manager of Department A who believed that present day graduates were very different in this respect. He considered as positive attributes their *'awareness of*

the potential for their development' and the fact that *'they're quite willing and they're quite unashamedly able to go forward and say, put their name forward for development.'* He believed that staff found this difficult to manage, many disliking and finding it challenging:

> *'that's not the animal that they saw ten years ago I think that's actually very good so a couple of years time when those guys hit Senior 1 posts and Superintendent posts or advanced practitioner posts they will be more able to stand up for themselves and to get for radiography what I think radiography needs. They are difficult and they are quite outspoken and they are quite forthright sometimes.*

However, it might be that, as noted by one of his Superintendent 2s, with experience graduates would come to realise that their confidence was misplaced and they *'still had a lot to learn.'* Examples of the downside of the high expectations of graduates were reported by the department's Superintendent 3, for example, where a newly qualified member of staff had asked where their office would be and which PC they could use, an outlook whose acceptability was regarded as at least debatable, not least because *'most of the Superintendents don't have offices or PC's but is that right or wrong?'* Graduates, he explained, wanted learning rooms in all areas of this fragmented department with internet access and email facilities. He was unsure whether they really needed them or whether it was a cultural phenomenon that they felt it should be provided. He further commented:

> *'Regarding on call they feel they should be picked up and taken home* [...] *they have a sort of an opinion a sort of take attitude. You always feel like giving them a shake and saying "Wake up, this is the real world".'*

He perceived graduates' expectations to be too high and speculated how such radiographers would have coped twenty years ago when there was no money available

to replace staff or equipment. His comments seemed to emphasise, yet again, a generation gap and the feeling that *'they'* do not know what it was like *'in the old days.'*

Such comparison of old and new breeds of radiographers was exemplified for the Manager of Department C in students' eagerness to engage with their first post. Graduates whom he had appointed last year wanted the whole of the summer off before they took up their posts. He compared it to his experience when he had been interviewed on a Friday and stared work on the Monday, having been out of work for six months previously. The climate had changed, graduates were now able to select when and where they worked. Social as well as individual expectations had changed. At interview seven (35%) informants felt that graduate radiographers did not perform as well as their predecessors, while 25% of questionnaire respondents had felt that they performed poorly or very poorly in the workplace, 26% also believing that graduates were poorly or very poorly prepared for their role when they first qualified, though only 7.5% thought they has not been competent in general radiography at the same point. Managers' responses were more positive than those of others, all of them believing they had been well prepared when they first qualified; that radiographers qualifying now performed well in the workplace and that all graduates were well prepared for their roles. They saw no evidence that demonstrated that Diploma courses or their assessment were superior to the degree courses on offer today.

The Superintendent 3 of Department C felt that the Department in which he worked was attractive to new graduates, being recently purpose built and having the latest equipment. Consequently he had been able to select staff rather than recruit those who might not be appropriate and had been pleased with the performance of the graduates employed. However, when he had worked in a clinical area in another department, his impression of graduates had been that they were not as practical as he had been when he qualified. Despite describing graduates as *'good, able, confident and willing to speak their mind'*, the manager of Department A doubted their technical (clinical) ability. He considered it not surprising that graduates' technical ability was

poorer than 20 years ago when he trained since most of his learning took place in an imaging department. While he considered this arrangement produced radiographers who were technically good, he also considered them unable to '*intellectually* [...] *argue and stand their ground as the students are able to today.*' He also considered todays' graduates '*more able to develop* [...] *and they're quite willing and they're quite unashamedly able to go forward and say, put their name forward for development.* The Senior 1 from Department C felt that graduates were more knowledgeable and better equipped to radiograph patients than when had he qualified over twenty years ago, having had to learn much more than students did ten years ago:

> '*there are some students who qualify and I'd be quite happy for them to x-ray my kid. There are some kids who qualify and I wouldn't have them anywhere near my dog. But that's how it was when we trained* [...] *so I think they are better equipped coming out now but I think they are forearmed before they come in as well. They come in with this bullet-proof attitude you know and I think their general attitude is different.*'

The Superintendent 3 of Department A admitted that he did insufficient clinical work with graduates to determine if they were prepared for their first job. However, he did think that graduates found it difficult if they were thrown in at the deep end and questioned whether this should happen. He felt that they expected to be given a file that said *"'in circumstances x do y" and, when z came up, they said "Where's the file?"'* Another Superintendent 3 of the same department recalled how he had to undertake an examination of which he had no knowledge or experience, feeling that current graduates should be able to adapt similarly. A colleague Senior 2 considered graduates to be well prepared but conceded that '*they need a bit more practice with difficult patients.*' One might ask whether movement by radiography education centres toward problem based approaches might better address such problems.

A Senior 2 in Department C was satisfied with the quality of graduates but felt that what had changed was the *'raw material'* rather than the product at the end of their

three years. He did have concerns about graduates whose attendance was bad because he predicted that they would become unreliable members of the radiographic workforce. Providing a student successfully passed all assessments they might still graduate even if their attendance was poor. Given that the main factor influencing whether graduates found employment where they wanted was their reference from the radiography education centre, poor attendees should receive poor references. Over the last few years, due to the shortage of radiographers, clinical areas had had little choice as to who they employed. More able students could successfully complete their course to a minimum standard, even if they missed considerable amounts of it. However, his colleague Senior 1 considered that students from his local radiography education centre were good;

> *'I think they get a good practical training. The bottom line is if you were lying on a trolley with a fractured femur I'd be happy to have most of them examine me.'*

The acid test among most professional insiders, whether teachers, doctors, nurses, radiographers, or whatever, continues to be thus expressed, catching that combination of technical *nous* and motivational integrity that they recognise as being the hallmark of acceptable, fellow others.

Summary

This chapter set out to unearth informants' perceptions at interview of the product and process of radiography education. It should be borne in mind that while a substantial minority of them admitted to knowing very little about the current undergraduate curriculum none felt unable to comment on its appropriateness. Moreover, while many also lacked much direct contact with students on placement, particularly in the larger departments where their experience was largely guided and monitored (even 'sheltered') by clinical teachers, all also were perfectly forthcoming as to their character and conduct. It revealed very considerable consensus, both among

those responsible for managing departments and others, as to the appropriate ends of undergraduate preparation in producing good, general radiographers with some knowledge of some of the continuingly unfolding specialisms. While this 'spoke for' most of the curriculum, it left a number of contested areas as contenders either for further inclusion or exclusion.

At the same time, although in existence since 1989, many informants exhibited a reluctance to accept degrees in radiography and, consequently, its graduates. They made many comparisons between diploma and degree students, many invidiously comparing the technical skills, 'practicality', initiative and personal qualities that they recollected themselves to have possessed upon job entry with those displayed by current newcomers. We cannot judge whether diploma trained neophytes performed better than current graduates and should probably not take too seriously the need to do so, given that the world in which they are required to perform is, by design, sufficiently dissimilar to those of earlier radiographic decades. We do know that there is greater rigour attached to the delivery and assessment of current programmes and that its products were generally thought capable by our respondents, particularly managers, of understanding and questioning processes and activities than their predecessors. The majority of the problems highlighted had more to do with imputed attitudes, anecdotally grounded in cultural differences between 'the youth of today' and their older post registration colleagues, than students' and graduates' lack of ability. There was repeated exemplification of how expectations had come to differ; a world where newcomers were expected to do mundane, unskilled tasks on behalf of qualified staff had become one of authority-questioning graduates, expecting support and early advancement, usually through further training/education, in well resourced contexts.

There would seem to be important conceptual and practical issues here. Conceptually, the first is methodological and concerns the character of data relying on recall that sometimes spans decades. The second echoes the observation made in earlier chapters that the technology of people-processing organizations, broadly

defined, tends to be a moralised and backward looking one, not least when under pressure of change. The third concerns the unrealized aspects of clinician-trainee relations which have changed structurally from ones of co-worker to those of pedagogy. One might say that while all of our respondents stood actually or potentially in pedagogic relation to students placed with them, they mainly exhibited lack of knowledge (if not overt denial) or misunderstanding of it. Moreover, this was compounded by their inability to differentiate between the forms of identity deliberately and, evidently, at least partially successfully, engendered by their education centre colleagues in their students via strategies, such as problem centred methods and youthful cultural identities ('me first, me too, me now'), the latter serving as explanatory categories in a world where educational discourse lacks its own voice (Bernstein, 1996). Practically, there are a clutch of issues not only as to a proper pedagogy for radiography education but as to how far both teachers and clinicians understand and participate in its character. It may be defensible that the latter should largely be kept out of dealings with undergraduates, particularly if their views of them are retrogressive though, surely, this would be to forgo an enormous, possible resource. But this does raise questions of what it would take to bring clinicians generally up to speed on course policies and practices and what the costs and benefits of their greater involvement might be. Radiography education has moved on and developed over the years but the majority of the radiographic workforce has not, as yet, followed the same journey, many of them, on our evidence, applying the principles of their own training, redundant in a more consumer-led environment of a more technological age to their judgments of student activities and needs. Students' clinical practice forms part of their education and, whether rightly or not in the eyes of some other participants, their activities while on placement surely deserve to focus on radiographic learning opportunities which facilitate success in assessments rather than relatively unskilled tasks, such as cleaning, fetching and carrying for qualified staff.

It is perfectly easy to say that there is a need for greater involvement of clinical staff in radiography education and improved communication between academic and

clinical centres to ensure that radiographers have ownership of and make meaningful contributions to students' preparation for practice. We should probably do so if we accept that informants' ignorance of the radiography curriculum appeared more related to motivation to learn rather than opportunity to do so, given that further effort is directed with that factor in mind. But it is less clear what form specifically different activity to remediate matters should make. Maybe the 'graduating' of the occupation and implementation of an increasingly CPD, research oriented and four-tiered world will produce altered contexts in this respect. A chasm was apparent between the radiography education centre and clinical areas in this study which, it could be argued, influenced students learning. Students' lack of knowledge, as highlighted by some informants, if accurately depicted, could be due either to students', lecturers or clinicians' inability to relate academic learning to clinical areas. Radiographers' lack of interest in educational matters may be attributable to lack of time, driven out by a variety of work pressures, into the arms of clinical lecturers. But is this the resolution that we want? Is it desirable that enthusiasm and expectation displayed by graduates to develop their roles and specialise early, regarded as necessary elements of lifelong learning, are perceived to be disrespectful by qualified staff? It may be indicative that while many of them who believed students should more assiduously obey instructions and not be overconfident the pedagogic message of the education centre enjoins them to be more forthright and gregarious. Finally, we should note that those who deal most closely with their needs and have the greater hand in their future employment, most managers and superintendents, believe in the product.

Chapter Eight

Conclusions and Recommendations

The preceding chapters have explored and offered comparisons between varieties of factors that, in one way and another can be held to have influenced changes in radiography practice in three establishments in South Wales. An attempt has been made to describe how these changes have influenced and been influenced by radiography education. Having done this, a particular attempt has been made to clarify and discuss the attributes and skills that graduates are thought to possess and which enable them to do the jobs required of them on first appointment and, prospectively, develop practice in the longer term. While set against an analysis of the literature as it has related to the emergence of radiography practice in the UK in general, the data presented is largely confined to these three departments.

It is of the greatest importance that what is claimed in the text and concluded upon here is read in the context of the limitations of the study. Above all, it has constituted my research apprenticeship and shows all the marks of the changes that I have undergone in pursuing it. At its simplest and most important, when I began it I found it almost impossible to write a sentence that was not tied to definite articles and had normative intent. My world was one of *the* radiologist's *role* whose professional pristineness concerned only *the* patient's wellbeing. Its chief 'ology' was ideology resting on a more or less straight-line belief in the connection between acquiring expertise by being taught it by the well meaning and practicing it with good heart in the best of all possible worlds. I have passed through not so much a process of disenchantment with that view, for I still believe that altruism is the saving grace of professionals, but of enchantment with a very eclectic set of ideas drawn from social science that illumine what and why radiographers do. Unfortunately these came to me at a very uneven rate and, in many cases, not at all at the best times in my research

progress. Some are still occurring and I risk in this chapter hinting at what should never be done in a thesis, the usefulness of insights not altogether already part of the text.

My main limit and struggle, presented in my chapter on methodology, concerned how to conceive of my fieldwork. This was rooted both in my practitioner stance – I wanted to make radiography education better and imagined that this could be effected by being clearer about what 'the radiographer' did. To adapt the phrase, what you saw was what you ought to give them, more or less critically. This combined with a belief in research practice that was essentially epidemiological to point me to fieldwork that involved description and analysis of large numbers of cases. I had few theoretical preconceptions upon which to structure such work and search of the specialist literature focussing either upon 'the radiographer's role' that I outline in Chapters Two and Three or radiography education gave me little other than cause for concern. Accounts of the historical trajectory of radiographers' work were few and weakly conceptualised. What had come to be the rather obsessive debate about their skills and training focussed very largely around a terminologically inexact and rather doomed literature on 'competence' and 'competencies', a decontextualised search for lists and recipes, having much in common with similar phases of nursing and teaching discourse. Rather mechanical cataloguing of 'the radiographer's tasks' that characterised early and important studies, such as that of NETRHA (1994) or borrowing techniques, such as critical incident analyses from other fields, seemed capable of encompassing the context and culture of radiographic practices in the way that I envisaged was necessary. Moreover, the sorts of work within radiography that seemed to address such issues, such as that of Paterson (1995), Price et al. (1997, 2002) Williams (1995) and Williams and Berry (1997), while deeply interesting, seemed methodologically flawed, most frequently eliding the mere presence of practices with judgements as to their incidence or importance and unduly given to the use of Delphi techniques that only the weak para-medical research community, particularly in nurse education, seemed to regard as satisfactory. My 'problem' - and it was my obsession for many months – was breadth versus depth. Difficulty in acquiring official, descriptive data on Welsh

departments at the level of adequacy available in England; decisions about time and resources that forced me to confront that my fieldwork had to be done 'at home' and compressed into time slots pinched from busy full-time employment; reading and discussion about the organisational character of our Health Service; and thinking about the nature of understanding in social science all led me toward a design focussed upon few, crucially different departmental sites where staff practices and perceptions could be described and analysed in some detail and sensitivity to context. I 'went qualitative' and the rest of my conceptual universe struggled to keep up with that decision. For example, only when coming to handle my own focus group, questionnaire and interview data, did I confront (and I commend readers to do likewise) the hopelessness of quantitative/qualitative divides for, while my account contains very few numbers, it is replete with adjectival counting – some, few, many, most and so forth. Moreover, I am constantly concerned by the elusiveness of categorisation. I encountered and talked to real people with complex, often messy and contradictory and always interesting views, often anchored in their experience and biography. In conventional reporting style these disappear into categories and perspectives, assuming weight and representativeness which defy a sense of proper balance and lose the wholeness of individuals. It is the fate of researchers, particularly using qualitative modes, to vex over how ranges of opinion and practice are to be fairly represented, with what weights and in what sequence. While attempting to abandon reification and essentialising, as I have done, in favour of plurality and balanced generalisation, it is also sad to see individuals disappear into the data-pot and I did consider offering cameos of a range of the respondents who I interviewed. At the end of the day is true to say, without making the meal of it that many 'interpretivists' do, that researchers' relation to their data and their senses of authenticity and wholeness are characteristic and inevitable parts of the reliability of qualitative reporting, where more conventional forms of its assessment are simply not appropriate. It might well be asked why such a declaration as this has not appeared either as preface to the study or as part of its procedural reflection. I hope that it is an extension and completion of what I claimed to do in framing and analysing my fieldwork in Chapter Four. But I place it quite deliberately here to represent the fact

that this study makes no claim to an all-seeing 'defined the problem, read the literature, took a theoretical position, framed the appropriate measures, collected, analysed and evaluated' trajectory. My ways were altogether more labyrinthine.

The study was conceived and has been conducted during a period of change in our Health Service probably unparalleled since its inception in the 1940s. Behind this change lie considerable shifts in the character both of the national workforce and that specialised in health care. The categories 'professional' and 'semi-professional' have come under increasing scrutiny and their occupational power and social standing seen to rest not only on their specialised knowledge bases and valued expertise but on their relation to the state itself. The professional workforce is state licensed and predominantly state employed. Its fate is strongly shaped by successive governments' policy objectives. It is inconceivable, therefore, that we should seek to understand what has happened to doctors, teachers, nurses, lawyers, architects or radiographers without an understanding of state policy or the changing relation of professional employees to the state. At the same time we should expect to find some parallels in the recent occupational histories of such groups in ways to which we have alluded throughout this text.

The influences that have borne upon state policies with respect of its production of public goods and services have been manifold. In general the state in the UK, as elsewhere in the liberal democratic world, has come to produce or dispose of roughly 40 percent of gross national product. Over the past thirty years, Welfare States, such as ours, largely under the influence of 'Chicago economics' whose chief British policy exponent was Thatcher, have sought to distance themselves wherever possible from direct involvement in production. Privatisation and marketisation have become watchwords for public policy, taking particular forms in each area within the public sector, including health provision. Private health provision has never been discouraged in the UK where the original 1947 Health Service Act settlement enshrined doctors' rights to private practice, initiating a complex system of effective public service

subsidisation of their extra-health service contractual activities. A favourable tax allowance regime (as for private education) helped to sustain private medicine, while relatively recent structural changes in the supply and demand for services, including the introduction of institutional 'purchasers' and 'providers' of health services have been accompanied by new opportunities for private health enterprise to enter the 'bidding culture' for public provision.

Such was the context against which the empirical work reported in Chapters Five, Six and Seven needs to be seen. In Chapter Six, in particular, it was contended that one of the assumptions of the last three decades of public policy has been that 'producer interests' (of teachers, doctors, radiographers, nurses and so on) in the public sector constituted 'the problem' rather than a source of dynamism and solution in the face of increasing need for expansion and change. They required exposure to efficiency-inducing competition and/or styles of management that characterised profit-seeking, private enterprise. This raised crucial issues of the autonomy of such professional workers, of the nature of the bargain struck, essentially between state employers and their professional associations, as to how far they were allowed a controlling voice in determining priorities, policies and practices. Teachers fared badly, having a knowledge base in terms of their pedagogic discourse shot through with the voices and priorities of other groups and categories, mainly of class, gender and ethnicity usually glossed as economic system and workforce needs. (Bernstein, 1996) Agendas for their structures and practices have been invaded relatively easily by Thatcherite and 'new' Labour policies, particularly those inspired by ideas of egalitarianism having 'gone too far'. In respect of health provision, the rise in public expectation and demand for increasingly complex and expensive 'solutions' has outstripped anything seen in education, even allowing for the impact of change in the latter from less than ten to more than 40 per cent of the age cohort experiencing some form of higher education. Doctors have proved rather more difficult to push around than teachers, though the well-marked disparities between their power and status and their para-medical co-workers have provided rich opportunity for boundary change and

dispute. Nurses have become particularly associationally alert, even, in the eyes of some groups, somewhat predatory in their willingness to embrace skill-mixing (i.e. job sharing/replacing) change, converting long standing injury as to the injustice of their 'handmaiden' status in relation to doctors into effective entry into more managerial and decision taking roles both in hospital and community based services. The mini-levers of change have existed in abundance in a policy climate redolent of Thatcher's rather unique discovery that the most productive way to change professionals was to announce its necessity ('there is no alternative') then pressurising those subject to it, through periods of rapid consultation, to furnish the means to actualise it by adducing all possible difficulties, objections and immanent solutions. When every problem comes to be regarded as an opportunity a world of performance measurement and accountability, evidence based practice, perpetual CPD and appropriately located clinical governance is one which, above all, requires active and extended 'management'. If our data attests to the ubiquity of anything, then it is the universality of the latter in radiography departments and their environs.

It was the links between promotion, remuneration, further training and specialisation of skills and functions that was probably the central feature of radiographers' work revealed by this study. At one extreme, some few respondents envisaged a nearby future where entrants came already specialised in particular procedures and, presumably, pursued a career within them. For most, however, the idea of a 'good grounding' in general radiography, presaged in pre- service training by some insight into key specialisms and followed by adequate opportunity to rotate through those available in particular departments, providing adequate grounds for subsequent choice of career activity, remained the pattern to be desired. Views differed as to length and detail of undergraduate specialisation (as it did on more anachronistic skills, such as nursing), desirability of rotation and length of time before 'development' and in-service training for specialities. Perhaps this is most obviously where the opportunity structures made available by departmental functions, always mediated by the culture, custom and practice of each, interacted with respondent views of the possible and desirable. As, hopefully, has been made clear in our account of the

character of each department, there were considerable contrasts, for example, in size, range of speciality, relations with radiology staff and practices as to rotation and specialisation, some built into the selection of the three sites, others appearing as emergent properties of the research process. Department B was small and specialised, employing only experienced radiographic staff, many of whom had prior experience of one or other of Departments A and C, entertained relatively few students and only for specialised placements and could be regarded as having a rather homogeneous, confident and supportive culture whose focal point was the highly skilled service that its member saw themselves delivering, over rather long time periods to patients. Relations with radiologists were conducive to radiographers' role development, partly due to the shortage of radiologists in this department but also to the team work and absence of protection of professional boundaries prevalent in the hospital. Department A encompassed all the specialisms, contained a huge variety of practice and staff exhibiting the widest diversity of views, from the most unreformed to the *avant garde*, on some, limited evidence, thrust new staff into a wide range of functions, including on-call, with great rapidity but offered unexpectedly limited opportunity for rotation because of the number and importance of specialisms, while also offering early and also rapid career opportunity within them. Though with exceptions, radiologists were seen in the main as jealous of their domains and restrictive of radiographers' ambitions to 'develop'. Its managerial and professional culture might properly be described as the least cohesive. Department C, serving a medium size general hospital, appeared to be attractive to staff both with respect of its social and professional ethos. Though some of its senior staff were less than convinced that all of their colleagues wanted to 'develop' or to make them selves available for some specialities it appeared to offer most opportunity for rotation and choice of career focus. Relations with radiologists favoured radiogrphers' 'role development' although its progress was slow and best characterised by radiographers' persistence overcoming radiologists' initial reluctance.

It would appear, then, that differences between departments were complexly attributable to features of their leadership and management and organisational

structures. All organisations tend to exhibit an underlying, self-perpetuating culture which can either entrench rather archaic and rigid beliefs or more open and well informed orientations toward novelty and change which differentially affect motivation and development of staff and team working. Availability of resources combined with interest (or lack of it) in attending study days and undertaking research, influenced informants commitment to continuing professional development and evidence-based practice.

It also highlights that the dominating fact of life for the scope and content of the practice of radiographers has been and is the overarching influence of radiologists in controlling their practices, role development (around which we noted a good deal of euphemism) and degree of autonomy. But what it was hoped that the fieldwork undertaken would help to tease out remains essentially, maybe irremediably, unresolved – is it the people or the structures? The personalities involved in determining hospital/departmental policies and practices seemed to have actual or potentially greater influence than key contextual or structural difference in the, albeit limited, number and type of, settings compared, for example by size, location or speciality. There still appeared to be enormous scope for the operation of traditional, hierarchical cultural forms and relations which appeared, for example, to be deeply embedded in and had greatest influence the largest department, A, where range and levels of expertise could be fairly regarded as second to none. Certainly among the autonomies sheltered by our radiological service is the right of its consultants to say 'no' to forms of 'role development' (job sharing/task delegation) or expansion into practices, particularly related to reporting, by radiographers, even when properly prepared or appropriately experienced. While their exercise did not necessarily lead radiographers to consider themselves other than as autonomous practitioners, on much of our evidence, particularly in contexts such as this, there were minimal grounds for support their belief in terms of reported or observed practice. Given that the press to 'be professional' is so great and that having a degree of decisional autonomy or discretion

as to practice is widely regarded as its heart this may be simply one more example of the regular disconnection between belief and action in our behaviour.

Recent and current shortage of radiologists exacerbated, if anything, by their expansion into interventional and up-to-the-minute diagnostic radiological and therapeutic procedures seem not to have greatly influenced their desire to relinquish aspects of their roles to radiographers. While both the literature and our informants suggested that radiographers can, with appropriate training, competently perform roles and other, new activities, hitherto regarded as the exclusive domain of radiologists, both were equally clear that many of the latter, as individuals on 'the shop floor' were not at all or only very equivocally supportive. There was inconsistency between what was happening in departments and support for radiographers' role development expressed in public policy and by radiographic and, even more importantly, radiological professional bodies. Under policy pressures and in face of unrelenting technological change, the areas where radiographers were most likely to be allowed to 'extend their roles' were those that facilitated prioritised service delivery where radiologists were in short supply or absent. The bottom line was always patient interests, its illocutionary force knockdown in policy and service discourse but the right to declare such interests satisfied continuing to be distributed on traditionally hierarchic lines

With very few exceptions, our respondent radiographers did not consider themselves equipped to challenge existing practices and were in some areas governed by the attitudes, opinions and personalities of their superintendents and managers. In some degree this may be an inevitable concomitant of the explicit grading hierarchy within which virtually all of them trained and practiced what was largely a service on demand in response to almost always formally superior others requesting specific investigations and procedures. There appeared to be little evidence among radiographers of a will to induce crises whose solution would confer power, as described in other contexts by Crozier (1964). The prospect of regrading implicit in a four tier system and the alteration of priorities immanent in *Agenda for Change* seemed

less to induce excitement at new possibilities than a sense of *déjà vu* at the labyrinthine ways in which policymakers sought essentially budgetary ends. The new dispensation was most usually seen to be driven by necessity and not clinical or professional logic. Opinions, other than of most of those whose business it was to manage whatever change was deemed appropriate, appeared to be rather mired in attitudes overloaded by initiatives. Above all there was suspicion that new assistant practitioners might 'develop' or 'expand' to perform tasks that had hitherto been staples of radiographers' existence. There can be little doubt that this was counterpart to radiographers', albeit limited, success in moving into radiologists' territory. This was not to say that objections to augmented 'helper' roles were not often cogently expressed, usually for the best of reasons that procedures could not be safely categorised as simple or complicated, that experience, art and judgement on an adequate knowledge base were their *sine qua non*. To have 'assistants' whose performance required constant supervision and sanction would be to negate notions of efficiency and service improvement upon which their existence was being officially predicated. At the same time such arguments did not seem to take into account the possibility that radiographers 'development' must have looked much the same from radiologists' perspectives, though it was frequently reiterated in Department A and elsewhere that the training needs of the latter would inevitably take precedence over radiographer wishes.

It may emerge that the views of the radiographers which I have represented are not characteristic of those in other locations in the UK. Despite specific shortages and local difficulties in recruiting for or inducing retraining in some specialities it may be that, as with the South Welsh teaching force, our stock of radiographers is relatively 'local' rather than 'cosmopolitan' in Gouldner's (1957) sense, whose professional life is marked by relatively low mobility and long service, strengthening values of seniority and 'place' even in an occupational group changing, mainly by specialising and segmenting, as much as radiography has been. In my view the possible validity of this explanation is increased by attitudes displayed towards other aspects of the proposed four tiers – a rather easy assumption that radiographers were worthy of upgrading combined with a

scepticism that consultant posts would abound, funding aside, given their perceived overlap with managerial roles and the interests of the already powerful. Finally, in this respect, in common with teachers, many respondents, particularly among the diploma trained, held strong views of the 'Rebecca' variety. Just as new machinery was once smashed in acts of nineteenth century employment self-protection so views of the world as once always having been simpler, more craft based, inhabited by prodigious characters to whom all things were possible in virtue of their guile and personality are understandable acts of cultural vandalism, attempts to stave off change by myth. The picture of the 'less practical' graduate, coupled with an image of today's youths whose respect for authority is greatly more conditional than those of their predecessors and whose conception of occupational and personal needs tend to expectations of instant fulfilment, are good example of exactly what ideology is – beliefs grounded in features of the real world mutated into 'natural' or inevitable phenomenon by those whose interests, if accepted, they tend to subserve and preserve.

Against this image of the 'less practical' graduate, whose unspoken term was 'too theoretical', stood general awareness of tension between the image of the 'good, general radiographer' and the increasing reality of specialised practice. There was considerable attachment to the necessity of a good grounding in the general round and of the centrality of experience in A&E where, indicatively, the practice of red-dotting and the reliance of relatively inexperienced junior medical staff upon the experience and expertise of radiographers made advances in reporting most common (along with, for other reasons, sonography). Among the variety of views expressed some seemed to privilege reliance on practical skills, such as have characterised fear and distrust of the graduate, the 'over-qualified', in nursing, teaching and policing. All of these seem somewhat predicated on the notion that practice has primacy, that it is a somewhat impenetrable entity in domains where tacit knowledge has acknowledged importance. Nursing has been particularly wedded to notions of theory-practice 'gaps' which are usually best understood as conventional practice unaffected by relevant conceptual thought (Thomas, 2003). The difficulty of such views rest on the belief that doing more

can substitute for knowing more in guaranteeing appropriate performance brought into some doubt by recent work on craft knowledge (Gamble, 2004). Many of our respondents, particularly at senior levels, attested to the brightness and competence of new and young staff members and with very few exceptions it was agreed that the market, if nothing else, decreed graduate preparation. Given the competition for recruits in a generally up-grading professional market, it was difficult to see that new entrants would settle for less than graduate status and remuneration.

As to the radiography curriculum, then, despite the large proportion (generally of the order of a half) of it being delivered in clinical areas, a divide was evident between academic and clinical centres which influenced the majority of radiographers' degree and sense of participation and responsibility for the education of undergraduates. Much student clinical learning was facilitated by clinical lecturers rather than practising radiographers. In less busy departments without full time clinical lecturers, such as B, radiographers showed greater involvement in undergraduate education. In the others, relative lack of participation and diminished sense of responsibility probably contributed to somewhat negative informant attitudes and opinions, at times verging on the hostile, towards students. At the same time managers, while not having direct, hands-on experience of them but having greater involvement with radiography education centres and frequent communication with clinical lecturers, tended to be more aware than others of the content and objectives of the undergraduate programme and of the importance of developing greater understanding of students' needs. While 'need for greater partnership' is inscribed on the hearts of most of those who work in academic areas it had little valence for most non-managerial clinical staff in this study. It is a question of some interest whether generally improved radiographers' knowledge of the curriculum would have consequences for improvement in students' clinical experience.

While respondents generally felt that undergraduate programmes should be providing new entrants with sufficient knowledge, expertise and ability to adapt their practices to cope with different types of patients and examinations encountered in

clinical areas, it was found that not only were both different in each setting but that other aspects of each organisational and professional environment played a major part in the skills and attitudes required of students. In Department A students were expected to be subservient, to undertake menial tasks and support the radiographer. In the other two departments while this support was required, staff treated students as members of their team, welcoming questions, an interest to learn and actively participating in that learning. While specific skills were needed at particular sites, student experience while on clinical placement in departments could vary considerably, not only because of types of work undertaken but attitudes of staff towards the student learning experience, suggesting that areas should be constantly reviewed to ensure their appropriateness as learning environments. Diploma trained radiographers, as we have already noted, were rather critical of the performances of undergraduates as students and qualified members of the profession, sometimes displaying reluctant acceptance of degrees for radiographers despite the fact that they were now well established. Perhaps even more importantly, the diversity of undergraduate clinical training was not reflective of the work of practising radiographers. The 'problem' that radiography education appears to have set itself is how to develop the 'universal' radiographer able to work in different settings through experiences that go rather further than the anodyne world of 'benchmark statements' (QAAHE, 2001). In contrast, as we have seen, at the time of the study, managers happy to train them in specialist areas when required, claimed to require radiographers capable of competently performing general radiography. Most of their subordinates considered neophytes abilities to be at an unacceptable levels in this respect but, presumably, capable of remediation if specialist areas included in the curriculum were to be reduced.

While I have striven to be open and reflective throughout this account it is important to note that, with hindsight, one could have conceived doing a number of things differently. First of all, I acknowledge that I have developed a much wider horizon on 'good research design' and that the choices that one makes always inevitably have strengths and weaknesses. At the level of scale and style, I would still like to have been

able to undertake a truly large scale survey to establish patterns of radiographic practice across a variety of clinical, organisational and governance settings. But equally I acknowledge that such work would be of little use if it merely established self-report data from individual respondents. It would need to be set against a range of organisational variables the character of which this study has only improved one's sense of rather than defined and elaborated. I would have liked to have been able to make English-Welsh comparisons, particularly in light of post-devolution divergence in performance measures on some aspects of the two systems. Both of these would require resources beyond the means of the lone, unfunded researcher. As to the highly delimited approach adopted, more than three establishments would have been better, a higher proportion of radiographers responding securer and inclusion of relevant *alters* to their *egos* highly beneficial. Radiologists are major players in this account but I approached none of them. Therapists of differing sorts and nurses are regular clinical interactants with my respondents but, like the patients who are the objects of all their attentions, I spoke to none of them either, nor did I interrogate policy-makers except through their written texts. Such limitation is a regular and unfortunate aspect of much work in social science and education where it is not simply some feature of researcher lack of imagination but conditioned by the political context of fieldwork. I secured permission to research radiographers as a radiographer and, as my final choice of sites turned out, largely among people that I knew and knew me. It would have been possible to design fieldwork so that a range of those, in old-fashioned language, within radiographers' role-sets were encompassed. This would have had to be at further cost to the number of departments with which I worked and probably reduced its scope to a single case study. While this is now a perfectly well accepted methodological election, it would have been too far away from my original urge to compare. Moreover, the 'who I was' and the gaining of permission to undertake such study would have been altogether more complicated than the relatively straightforward entry through a relatively small number of gatekeepers that I was able to effect. This is not to say that it would not be a very important form of work to undertake, even that it may be of the highest priority if the present and future trajectory of radiographers' work and careers is to be best

understood. And as to the specific methods that I used I would reiterate that relatively open interviews were, in my judgement, the most fruitful source of information about the sort of issues with which I was concerned. At the same time, I could not have framed their agenda or located respondents without earlier questionnaire collection and I would not have achieved questionnaires of the quality that I hope were constructed without focus group work, albeit limited, and a sense of what distinguished the odd and ephemeral from the solid in responses that comes from knowing the field and sharing its practices. A number of things flow from this latter position. Firstly, it would have been valuable to have undertaken more formal periods of observation than were possible from my work and research visits to the departments though, time apart, they would require considerable further thought and cooperation to be effective. Secondly, the amount and type of contact that I had certainly traded upon but did not seem to violate collegial relations. I was received with interest, courtesy and kindness but there is always the issue of when enough is enough and becomes too much. Thirdly, I have to ask myself in retrospect, just as I hoped that I did at the time, how effectively I was able to stand outside of a culture that had 'made' me as much as those whose views and behaviour that I was seeking to report with both sympathy and objectivity. Part of that process lies, obviously, in interacting with the views of absent 'others' in the literature and a present supervisor with whom preconceptions and preferences are slowly exchanged for appropriate, critical conceptual and theoretical insight that enables starting points to be transcended. How far this has been successfully achieved lies very much in the judgement of the reader.

I come from a genre where 'recommendations' slip out easily alongside 'conclusions' but everything that I have learned in undertaking this thesis tells me that while policy-makers and decision-takers have to produce that sort of discourse, the process that I have indulged in has raised problems and issues whose definition, let alone solution, are far from clear. In that spirit I would enjoin radiographers and those who determine their activities to work to clarify understanding of the nature of the changing contexts within which their work is undertaken. While the knowledge base of

radiography is technically very substantial it is social-science rather naïve. Radiography education, like education elsewhere, has a pedagogic discourse largely determined by others. There does seem to need to be dialogue between and among both clinical and education practitioners as to what sort of skills and identities are and ought to be being produced in graduate entrants. Moreover, the same sort of process ought to extend to the character of in service education and specialisation whose intimate connection with career and reward we have noted. If this process is to be more than febrile it must be based on appropriate forms of research and be largely conducted and controlled by radiographers themselves in knowing relation with radiologists. While resisting all forms of essentialising professional characteristics (the sentence beginning 'True professionals are...' should only end 'not interested in being tied down by a list of traits') it can be noted as useful at this point in time that they are no longer sole practitioners but tend to organise not only their own work but that of others and that they say no quite effectively, even to authoritative others but only on knowledge-based and technically competent grounds. There is plenty to do in providing these in our field if the halting progress that has been described in radiographers' work and education is to continue.

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Appendix One

Pilot Interview Schedule 1

Pilot Interview Schedule 1. (Interviews tape recorded)

1. Name.....

2. Place of Work

3. Are you employed?

Permanent	Temporary
Full Time	Part time
Job share	Other?

4. What are your number of contracted hours worked per week?

5. Qualifications and dates (years) obtained

6. i) How many years have you practised since qualification?

   ii) How many years in this post

   iii) Previous Posts?

7. Did you have a career break, if so for how long?

8. Tell me about your job
   Prompt: What do you see your job as?

9. Interviewee shown a list of areas / rooms and asked in which areas / rooms he/she works.

10. Are there any other areas that you work in?

11. How long do you work in each of these areas

12. Do you spend an equal time in each of these areas?
    Why (not)?

13. How, if at all, is your job is different to that of other radiographers of the same grade?

14. Who are you accountable to?

15. i) Who decides (runs) what you do in this department?
    (Who decides what images you produce?)

ii) How does your job change (if at all) when you are working "out of hours" i.e. on-call and at weekends.

Prompt: Are there any things you do out of hours, which you wouldn't do when working 9-5

16. Look at this list of activities. Are there any activities you carry normally carry out that are not included in this list.

Question 16 Activities (provided on a separate piece of card)

i) Practical Aspects of general patient care:
Dressing / undressing the patient, providing with vomit bowls etc.

ii) Observation activities e.g. taking blood pressure, temperature etc.

iii) Non "radiographic" duties assisting radiologist e.g. preparation of contrast, assisting in sterile procedures

iv) Communicating with patient (instructions, advice etc.)

v) Counselling – dealing with problems etc.

vi) Positioning patient for examination

vii) Positioning equipment

viii) Setting exposures

ix) Analysing clinical information

x) Choosing appropriate imaging materials

xi) Decide on most appropriate projection / technique

xii) Adaptation of basic techniques appropriate to patient

xiii) Image processing

xiv) Image manipulation

xv) Image Evaluation

xvi) Role development activities (specified)

xvii) Administration

xviii) Management

xix) Other

17. In general what three activities of your role take up?
    i) most of your time? (in order)
    ii) least of your time. (in order)

    Interviewee asked to expand on what these activities entail

    iii) What three do you consider are the most important (in order)
    Why?
    Expand on what these activities entail

    iv) What three do you consider are the least important (in order)?
    Why?
    Expand on what these activities entail

18. How, if at all, does your job change when working in different rooms, that is, what different skills do you need?

19. What special skills (if any) do you have?
    Prompt injecting, reporting, counselling etc

20. How do these skills change when you are working in different areas?

21. What do the following mean to you and on a scale of 1 – 4 how important is each in your role as a radiographer?

    1 = very important 2 = important 3 = unimportant 4 = very unimportant

    a) Professionalism
    b) Working as a team member
    c) Being able to work on your own (autonomy)
    d) Ability to question accepted practice
    e) Research Skills

22. i) What aspects of your role do you think should be performed by someone else?
    Who?
    Why?
    Why does it not happen?

    ii) What aspects of your role, if any, do you feel could be performed by someone else?
    Who?
    Why?
    Why does this not happen?

23. What activities or skills (if any) do you feel you could perform currently performed by someone else.

Role Development

24. i) What role development activities do you routinely perform

Prompt: Intravenous Injecting Reporting Red-Dot

Barium Enemas. None

ii). What if anything, is preventing your role development?

25. How do you think the radiogrphers role will change, if at all, in the future (when will these changes occur prompt 1 - 5 years, 5 - 10 years?

26. What is your involvement with student radiography education / training (What do you think about radiography education of today?)

27. What is your opinion of the performance in the workplace of radiographers qualifying now
Are graduates prepared for their role now and in the future.

28. What clinical skills do you think graduates should have (when they qualify)?

PROMPTS

Do you think newly qualified radiographers should educate radiographers to:

i) undertake general radiography only
(plain radiography, contrast studies(not DVI), mobile radiography but not mammography ultrasound, CT, DVI, MRI, Radionuclide Imaging)

ii) undertake general radiography, with a little knowledge of specialised techniques, such as MRI, CT, Mammography

iii) undertake general radiography and specified specialised techniques(specify which techniques).

29. What do you feel is not included sufficiently in the present radiography education.

30. What do you believe should be excluded or reduced in present day radiography education?

31. Is there anything else you would like to add regarding the role of the radiographer or any issues arising from this interview?

Appendix Two

Focus Groups

Radiographers' Activities Identified by Focus Groups

Issues raised by Focus groups

Radiographers' Activities Identified by Focus Groups

i) Practical Aspects of general patient care: Dressing / undressing the patient, providing with vomit bowls etc

ii) Observation activities e.g. taking blood pressure, temperature etc

iii) Non "radiographic" duties assisting radiologist e.g. preparation of contrast, assisting in sterile procedures

iv) Communicating with patient (instructions, advice etc)

v) Cleaning of equipment and general preparation of room

vi) Preparation of equipment and accessories for examinations

vii) Preparation of room for examinations

viii) Counselling – dealing with problems etc

ix) Positioning patient for examination

x) Positioning equipment

xi) Setting exposures

xii) Analysing clinical information

xiii) Choosing appropriate imaging materials

xiv) Decide on most appropriate projection / technique

xv) Adaptation of basic techniques appropriate to patient

xvi) Image processing

xvii) Image manipulation

xviii) Image Evaluation

xix) Role development activities (specified)

xx) Administrative tasks

xxi) Management

xxii) Other

Issues Raised by Focus Groups

1. Is there a need for a radiographers to be qualified in diagnostic only or diagnostic and radiotherapy? Unable to decide.

2. Radiographers should have some knowledge of all specialties when they qualify but competency in specialisms is not required. Potential areas for specialists achieved during a fourth year of the undergraduate programme:

    - Ultrasonographer
    - C.T. Radiographer
    - RNI
    - MRI

3. Radiographers could qualify with a skill in one of these below but something (not clinical) would need to be dropped from the current programme.

    - injecting
    - counselling
    - reporting
    - screening-DVI

4. A pre-registration period would be useful

Appendix Three

Pilot Questionnaires

Pilot Questionnaire: Radiographers

Pilot Questionnaire: Managers

Radiographers Feedback on Pilot Questionnaire

Managers Feedback on Pilot Questionnaire

Questionnaire :

Unless indicated otherwise ,where an option is provided please circle the appropriate response

Section A : Personal Background

1. Name.....

2. Place of Work.....

3. Please indicate your grade

Radiographer **Senior 2** **Senior 1** **Super 4**

Super 3 **Super 2** **Other.....**

4. Are you working :

Full Time **Part time** **Job share**

Other.....

5. Is your contract : **Temporary** **Permanent**

Fixed Term **Other.....**

6.Please state your contracted hours per week. ☐

7. Please list all posts to present giving grade, location and approximate dates

Post	Grade	Location	Dates

8. Please list all post school qualifications with dates (years) obtained.

Qualification	Year obtained	Awarding Body

9. Please list any study days , short courses or conferences you have attended in the last two years

Title of Day / Course	Main Theme	Approximate date

10. Please state any current qualifications being studied for or courses being undertaken

Qualification / Course	Expected date of Completion	Awarding Body / Organising Body

11. Excluding research completed as part of a qualification please list any research activities you have completed or are currently undertaking.

Title of research	Dates (approx)

Personal Role and Responsibilities

12 a) Please place a tick against clinical work presently undertaken.

	✓		✓
General		**Interventional Radiography**	
A & E		**IVU**	
GI Tract Contrast Studies		**Mammography**	
DVI		**Cardiac Catheterisation**	
CT		**Ultrasound**	
MRI		**RNI**	
Mobile (including theatre)			
Other (please state).....			

b) Please indicate how often you rotate through these rooms / areas

Weekly **Fortnightly** **Monthly**

Other (please specify).....

13 a). On a yearly basis do you spend an equal time in each room / area? **YES/NO**

b) If **NO** in which room/area do you spend most of your time?

14. Please indicate the number of staff in each discipline (if any) who are answerable to you

Radiographers	☐	**Administrative**	☐
Helpers / darkroom	☐	**Nursing**	☐
Ancilliary	☐	**Other**	☐

15.a. Who are you directly accountable to on a daily basis? (please tick)	
Radiography services manager	
Business Manager	
Superintendent I	
Superintendent II	
Superintendent III	
Superintendent IV/Senior I	
Senior II	
Clinical Director	

15b.) Who decides (runs) what **you** do on an everyday basis? (Circle One)

Radiography Services Manager
Business Manager
Superintendent II
Superintendent IV/Senior I
Other.....

Clinical Director
Superintendent I
Superintendent III
Senior II

16. Please circle any out of hours duties that you participate in

Evenings	**Nights**	**On call from Home**
Saturday Morning	**Weekends**	**Other.....**

17. Please state the average number of hours you work in total per week ☐

18. Please circle any role development activities you routinely perform, adding any not listed.

Intravenous Injecting	**Reporting**	**Red-Dot**
Barium Enemas.	**Counselling**	**Barium Meals**

Other.....

19. Please state any additional responsibilities (e.g. manual handling co-ordinator, training, radiation protection supervisor, training, supervision/assessment of students, committee member etc)

1.

2.

3.

4.

5.

20. a) Would you say your job is different to that of other radiographers of the same grade?

YES / NO

b) If you answered **YES** to the above question , please indicate below what the difference is.

.....
.....
.....
.....

21. Please list **up to THREE** main qualities or skills you feel you need in your job.

i)

ii)

iii)

22..List any aspects of **your** role you think ***could*** be performed by someone else.

23. List any aspects of **your** role you think ***should*** be performed by someone else

24. What activities or skills currently performed by someone else do you think you ***should*** do (with appropriate training)?

Please examine the list of activities
ADD any that you do which are not included
Cross off those which you **do not** do.

a) Practical aspects of general patient care (dressing/undressing the patient, providing with vomit bowls etc.)
b) Observation activities e.g. taking blood pressure, temperature etc.
c) Non "radiographic" duties assisting radiologist or other person e.g. preparation of contrast
d) Assisting in sterile procedures
e) Communicating with the patient 9instructions , advice etc)
f) Cleaning of equipment and general preparation of room(assembling linen etc)
g) Preparation of equipment and accessories for examination
h) Preparation of room for examination
i) Counselling
j) Positioning patient and equipment for examination
k) Setting exposures
l) Analysing clinical information
m) Choosing appropriate imaging materials
n) Decide on most appropriate projection/technique
o) Adaptation of basic techniques appropriate to patient
p) Image processing
q) Image manipulation
r) Image evaluation
s) Administrative tasks
t) Management
u) Other

25. In your opinion which of the following describes YOU (circle all that apply) Add any descriptors you feel appropriate.

a) Professional

b) Team member

c) Independent worker (autonomous)

d) Questioner of accepted practice

e) Researcher

f) Technician

g)

Other.....

Section B: Professional Roles

25 Who ultimately decides on departmental policies? (e.g. the accepted projections, referrals etc)

Clinical Director

Radiology Directorate **Other (state).....**

26. Who organises the day to day running of the department?

Superintendent 1 **Superintendent II**

Superintendent III **Senior 1 / Superintendent IV**

I do

Other (please state).....

28. Please examine the list of daily activities of clinical radiographers
Add any that you feel should be included
Cross off those, which you feel, are **not** applicable

a) **Practical Aspects of general patient care:**
Dressing / undressing the patient , providing with vomit bowls etc.

b) **Observation activities e.g. taking blood pressure, temperature etc**

c) **Non "radiographic" duties assisting radiologist e.g. preparation of contrast**

d) **Assisting in sterile procedures**

e) **Communicating with patient (instructions, advice etc)**

f) **Cleaning of equipment and general preparation of room**

g) **Preparation of equipment and accessories for examination**

h) **Counselling**

i) **Positioning patient and equipment for examination.**

j) **Setting exposures**

m) **Analysing clinical information**

n) **Choosing appropriate imaging materials**

o) **Deciding on most appropriate projection / technique**

p) **Adaptation of basic techniques appropriate to patient**

q) **Image processing**

r) **Image manipulation**

s) **Image Evaluation**

t) **Administrative tasks**

u) **Management**

v) **Other .....**

29. Please circle any role development activities **radiographers** in this department routinely perform, adding any not listed.

Intravenous Injecting **Reporting** **Red-Dot**

Barium Enemas. **Counselling** **Barium Meals**

Other.....

30. Please circle any of the following you would use to describe radiographers. Add any descriptors you feel appropriate

a) **Professionals**

b) **Team members**

c) **Independent (autonomous) workers**

d) **Questioning of accepted practice**

e) **Researchers**

In addition.....

.....

31..List any aspects of the **clinical radiographer's role** you think sh*ould* be performed by someone else.

.....

.....

.....

.....

.....

31. What activities or skills currently performed by someone else do you think **clinical radiographers *should* do** (with appropriate training)

.....

.....

.....

.....

.....

33. Do you think that.....

	Strongly Agree	Agree	Disagree	Strongly Disagree
Role development of radiographers should be actively encouraged?				
Most radiographers want to develop their roles?				
Other professionals are obstructing the role development of radiographers?				
If radiographers continue to develop their roles part of their existing role will have to be undertaken by another suitable trained category of staff.?				

Radiography Education

34. Please respond to the following

	Very well	Well	Poorly	Very Poorly
a) How well did your radiography education(training) prepare you for your role when you first qualified?				
b) How well did your radiography education (training) prepare you for your role at later stages in your career?				
c) How do you think radiographers qualifying now perform in the workplace?				
d) How well does present day radiography education (training) prepare those qualifying for their role when they first qualify?				
e) How well does present day radiography education (training) prepare radiographers for their role at later stages in their career?				

35. Please respond to each of the following

Radiographers qualifying now should be:

	Strongly Agree	Agree	Disagree	Strongly disagree
Competent in general radiography				
Have no experience of specialised procedures				
Have only limited experience of specialised procedures				
Competent in one specialised procedure				
Competent in most specialised procedures.				
Competent in all specialised procedures				

Some examples of specialised procedures are-MRI, CT, Ultrasound, Nuclear Medicine,Cardiac Catheterissation, Angiography etc.

36. What do you feel is not included sufficiently or at all in present undergraduate radiography education (training)?

.....

.....

.....

.....

37. What do you believe should be excluded or reduced in it?

.....

.....

.....

38. Do you feel the staff of this department are able to participate in sufficient post graduate education
(study days, courses, conferences etc.)

YES / NO

Thank you very much for completing this questionnaire. I will contact you in the near ffuture to arrange a time for an inerview.

Questionnaire : Managers

Section A : Personal Background

1. Name.....

2. Place of Work.....

3. Please indicate your grade

Super 3 **Super 2** **Super 1**

Manager **Other**.....

4. Are you working :

Full Time **Part time** **Job share**

5. Is your contract : Temporary **Permanent**

Fixed Term

6.Please state your contracted hours per week. ☐

7. Please list all posts to present giving grade, location and approximate dates.

Post	Grade	Location	Date

8.Please list all post school qualifications with dates (years) obtained.

Qualification	Year Obtained	Awarding Body

9. Please state any current qualifications being studied for or courses being undertaken:

Qualification / Course	Expected Date of Completion	Awarding Body / Organising Body

10. Excluding research undertaken for a qualification, please list any research activities you have been or are currently involved in.

Title of Research	Dates (approx)

Personal Role and Responsibilities

11. a) Please circle any "hands on" clinical work presently undertaken.

General **A & E** **GI Tract** **DVI**

CT **MRI** **Mobile (Theatre)** **RNI**

Ultrasound **Interventional Radiography** **IVU**

Mammography **Cardiac Catheterisation**

Other.....

b) What proportion of your time is spent on clinical work in total?

75% + 60%-74% 45%-59%

30-44% 15-29% 0-14%

12. Please indicate how many staff you are responsible for in each discipline?

Radiography ☐ **Administrative** ☐

Helpers / darkroom ☐ **Nursing** ☐

Ancillary ☐ **Other** ☐

13. Delete any of the following, which would **NOT** be used to describe your current role or part of it. Please add any descriptors not listed

Budget holder	**Professional**
Human resource manager	**Team member**
Administrator	**Leader**
Clinical radiographer	**Statistician**
Researcher	**Decision-maker**
Team Builder	**Committee member**
Questions accepted practice	**Works independently**

Other .....

14. Who are you directly accountable to?

District Superintendent/ District manager	**Clinical Director**
Radiography Services Manager	**Business manager**

Other (Specify).....

15. Please circle any out of hours duties that you participate in

Evenings	**Nights**	**On call from Home**
Saturday Morning	**Weekends**	**Other**.....

16. Please state the average number of hours you work in total per week. ☐

17. Please circle any role development activities you routinely perform, adding any not listed.

Intravenous Injecting	**Reporting**	**Red-Dot**
Barium Enemas.	**Counselling**	**Barium Meals**

Other.....

18. Please state any additional responsibilities/aspects of your role not previously mentioned..

19. a) Would you say your job is different to that of other managers of the same grade?
YES / NO

b) If you answered YES to the previous question , please indicate below what the main difference is.

20. Please list up to three main qualities or skills you feel you need in your job?

21. List any aspects of **your** role you think could be performed by someone else.

22. List any aspects of **your** role you think *should* be performed by someone else

23. What activities or skills currently performed by someone else do you think could do (with appropriate training

Section B: Professional Roles

24. Who ultimately decides on departmental policies?

I do **Clinical Director**

Radiology Directorate **Other (please specify).....**

25. Who decides (runs) what is done in this department on an everyday basis?

I do **Clinical Director**

Radiology Directorate **Other.....**

26. Please examine the list of daily activities of clinical radiographers
Add any that you feel should be included
Cross off those, which you feel, are not applicable

a) **Practical Aspects of general patient care:**
Dressing / undressing the patient , providing with vomit bowls etc.

b) **Observation activities e.g. taking blood pressure, temperature etc**

c) **Non "radiographic" duties assisting radiologist e.g. preparation of contrast**

d) **Assisting in sterile procedures**

e) **Communicating with patient (instructions, advice etc)**

f) **Cleaning of equipment and general preparation of room**

g) **Preparation of equipment and accessories for examination**

h) **Counselling**

i) **Positioning patient and equipment for examination.**

j) **Setting exposures**

m) **Analysing clinical information**

n) **Choosing appropriate imaging materials**

o) **Deciding on most appropriate projection / technique**

p) **Adaptation of basic techniques appropriate to patient**

q) **Image processing**

r) **Image manipulation**

s) **Image Evaluation**

t) **Administrative tasks**

u) **Management**

v) **In addition .....**

27. Please circle any role development activities **radiographers** in this department routinely perform, adding any not listed.

Intravenous Injecting **Reporting** **Red-Dot**

Barium Enemas. **Counselling** **Barium Meals**

Other.....

28. Please circle which of the following you would use to describe radiographers Add any descriptors you feel appropriate

a) **Professionals**

b) **Team members**

c) **Independent (autonomous) workers**

d) **Questioning of accepted practice**

e) **Researchers**

In addition.....

.....

29. List any aspects of the **clinical radiographer's role** you think *could* be performed by someone else.

30. List any aspects of the **clinical radiographers role** you think *should* be performed by someone else

31. What activities or skills currently performed by someone else do you think clinical radiographers could do (with appropriate training)

32. Please indicate with * those of the above which you feel clinical radiographers should undertake in the future

33.

	Strongly Agree	Agree	Disagree	Strongly Disagree
Role development of radiographers Should be actively encouraged				
Most radiographers want to develop their roles				
Other professionals are obstructing the role development of radiographers				
If radiographers continue to develop their roles part of their existing role will have to be undertaken by another suitable rained category of staff.				

Radiography Education

34. How well did your radiography training prepare you for your role when you first qualified?

Very well **Well** **Poor** **Very Poor**

35. How well did your initial radiography education prepare you for your role at later stages in your career?

Very well **Well** **Badly** **Very Bad**

36. . Would you rate the performance of radiographers qualifying now as

Very Good **Good** **Poor** **Very poor**

37. Which of the following most strongly reflect your view

Radiographers qualifying now should be competent in :

a) General radiography only with no experience of more specialised procedures.

b) General radiography with a knowledge of more specialised procedures .

c) General radiography and at least one specialised procedure.

d) General radiography with an ability to do all specialised procedures.

38. How well does present radiography training prepare those qualifying for their role in the early stages of their career?

Very Well Well Poor Very Poor

39. How well does present radiography training prepare those qualifying for their role later on in their career?

Very Well Well Poor Very Poor

40. What do you feel is not included sufficiently in present undergraduate radiography education (training)?

41. What do you believe should be excluded or reduced in it?

42. Are you satisfied with the number of study days/ courses/ conferences you have been able to attend over the last two years? **YES / NO**

If NO please give the main reason why you have not been able to attend?

If YES please state the main factor enabling you to attend.

42. The staff of this department are able to undertake sufficient post graduate education

Strongly agree Agree Disagree Strongly Disagree

Thank you very much for completing the questionnaire. I will contact you in the near future to arrange a time for the interview.

Shaaron Pratt

FEEDBACK ON PILOT QUESTIONNAIRE: RADIOGRAPHERS

Please feel free to indicate on the questionnaire itself any changes you think appropriate and / or add your comments below.

1. **Overall opinion of questionnaire**

Respondent 1 = A little long
Respondent 2 = too long

2 a) Please indicate any questions you found particularly difficult to complete

Q9 Insufficient room here (R3)
Q 31, 32 (R3)
Q21 Do you want these in order? (R4)
Q27 I work in more than one hospital so the answer differs (R4)
Individual areas of the department are run by different superintendents

Q31
c) This is a sweeping statement and will depend on the individual (R2)
d) Depends (R2)
e) Depends on course. Not extended role-do you mean that?
It would be quite hard for radiographers not involved with student radiographers to comment on their training. (R2)

b) How would you change the questions identified in a)

No responses

3. **What questions do you feel should be omitted?**

Personal questions. Why do you need to know the person's name?
Respondent 3 = A1
Respondent 2 = Is Q 27 a repeat of Q 15?
Is Q 28 a repeat of Q 23?

4. **Questions you feel should be added**

Ask for grade and title in Q3 (R1)
Add 'other' to Q 15a
For 'other' in Q 14 ask person to specify what discipline
Do you feel under pressure to take on role development? (R3)
Include a tick box –what role development activities do you undertake (R2)

FEEDBACK ON PILOT QUESTIONNAIRE: MANAGERS

Please feel free to indicate on the questionnaire itself any changes you think appropriate and / or add your comments below.

1. **Overall opinion of questionnaire**
   Quite thought provoking (M1)
   Thorough (M1)
   A bit long (M2)

2 a) Please indicate any questions you found particularly difficult to complete

Q 7, 8, 9.	I couldn't remember and had to look through my diaries. This might put some people off. (M2)
Q20	(M1) Just lots to think about
Q26 & Q 27	(M2)
Q 22-24	(M2)
Q35	(M1 & M2)

b) How would you change the questions identified in a)
I don't know what the difference is between Q26 & Q27. I guessed! (M2)
The grid lines in Q35 are either too small or too narrow. They should be the same. (M2)

3 **What questions do you feel should be omitted?**
None (M1)

4 **Questions you feel should be added**
Is there a role for a clinical specialist radiographer? (M1)
Does the current career structure accommodate the role development appropriately at present? (M1)
How should the career structure be altered? (M1)

5. **Any other comment?**
I would prefer to see MRI/CT and Ultrasound/General combinations (M1)
It might be better to list specialist procedures. (M1)

Appendix Four

Poster (reduced for binding) and Letter Inviting Participation

HELP!!!!!!!!!

Radiographers needed to participate in an important study which will be of value to YOU , the Profession & Radiography Education.

Dear Colleagues

I am a radiography lecturer at XXXX. Your manager has agreed that the PhD I am undertaking at Cardiff University is a worthwhile project and that this department can be used as one of the few selected to participate. I hope you will agree to complete a questionnaire which will shortly be distributed as your input is vital.

XXXXXXX has agreed to help me distribute and collect the questionnaires which will seek to gain information on factors influencing radiographers' roles, pre and post registration education. More information will accompany the questionnaires and I will be available in the department on the following dates XXXXXX or on Tel. XXXX to answer any queries. Thanks in anticipation.

Shaaron Pratt

Dear Colleague

I am a lecturer in radiography education at the XXXXXXXXXXXXXXXXXX and am undertaking a PhD at Cardiff University.

A considerable amount of work has been completed so far in my study and the next step involves the completion of questionnaires, followed by interview, of various grades of radiographers, including managers.

The settings for use in my study have been carefully chosen as those which will provide a picture of what radiographers do in the workplace and their perception of the existing and future role of the radiographer. Your department is a perfect example of a **large busy department, which undertakes a wide range of examinations based in a teaching hospital.* Information from it will provide valid and reliable information, alongside that from other contexts, to enable me to examine how radiography education centres may improve their education programmes in the light of reliable and up to date evidence of your professional work.

I appreciate there are many demands on your time and that of your staff but I do feel strongly that until a clear picture emerges about the nature of the radiographer's work and relationships, radiography education may be excluding vital elements that the service requires or perhaps including those which are nor longer necessary.

The questionnaire should take 10-15 minutes to complete. Each interview should last no longer than 30 minutes. Both would focus on the tasks undertaken by respondents / interviewees and the influences upon them. It is hoped that the interview can be audiotaped. All information regarding the source of the information and the identity of the department will remain completely anonymous.
I will contact you in the next few days to arrange a convenient time when we could meet and discuss the study further.

The completed project should enable the radiography profession to demonstrate the value of their work and allow radiography education to be geared to the needs of the service. I hope you will be able to assist in this work and look forward to speaking with you. If you have any queries in the meantime please do not hesitate to contact me.

Yours faithfully

S.D. Pratt (Mrs)

*Amended for each department as appropriate

Appendix Five

Questionnaires

Radiographers Questionnaire

Managers Questionnaire

Section A: Personal Role and Responsibilities.

This first section relates to YOUR role

A.1

a) Please place a tick against clinical work presently undertaken.

	✓		✓
i) General		**viii) Interventional Radiography**	
ii) A & E		**ix) IVU**	
iii) GI Contrast Studies		**xi) Mammography**	
iv) DVI		**xii) Cardiac Catheterisation**	
v) CT		**xiii) Ultrasound**	
vi) MRI		**xiv) RNI**	
vii) Mobile (including theatre)			
Other (please state).....			

b) Please circle how often you rotate through these rooms / areas

i) Weekly **ii) Fortnightly** **iii) Monthly**

iv) Other (please specify).....

A2.

a) On a yearly basis do you spend an equal time in each room/area?

YES/NO

b) If NO in which room/area do you spend most of your time?

.....

A3.Please indicate the number of staff in each discipline (if any) who are answerable to you.

i) Radiography ☐ **iv) Administrative** ☐

ii) Helpers / darkroom ☐ **v) Nursing** ☐

iii) Ancillary ☐ **vi) Other (please identify).....** ☐

A4.a) Who are you directly accountable to on a daily basis? **(please tick)**	
i) Radiography Service manager	
ii) Businesses Manager	
iii) Superintendent I	
iv) Superintendent II	
v) Superintendent III	
vi) Superintendent IV/Senior I	
vii) Senior II	
viii) Clinical Director	
ix) Other.....	

A4b) Who decides (runs) what you do on an everyday basis? **(please tick)**			
i) Radiography Service manager		**v) Clinical Director**	
ii) Business manager		**vi) Senior II**	
iii) Superintendent I		**vii) Superintendent IV/Senior 1**	
iv) Superintendent II		**viii) Superintendent III**	
ix) Other.....			

A5.Please circle any out of hours duties that you participate in

(i) Evenings **(ii) Nights** **(iii) On call from Home**

(iv) Saturday Morning **(v) Weekends** **(vi) Other**.....

A6. Please state the average number of hours you work <u>in total</u> per week. ☐

A7. Please circle any role development activities you routinely perform, adding any not listed.

(i) Intravenous Injecting **(ii) Reporting** **(iii) Red-Dot**

(iv) Barium Enemas. **(v) Counselling** **(vi) Barium Meals**

(viii) Other (please specify).....

A8. Please state any additional responsibilities (e.g. manual handling co-ordinator, training, radiation protection supervisor, supervision / assessment of students, committee member etc.)

.....

.....

.....

A9. How (if at all) is your job different to that of other radiographers of the same grade?

.....

.....

.....

A10. Please examine the list of daily activities of some clinical radiographers With reference to **YOUR ROLE** indicate how often you undertake the following Please add any activities not listed

	Frequently	Occasionally	Never
a) **Practical Aspects of general patient care**			
b) **Observation activities e.g. taking blood pressure, temperature etc.**			
c) **Non radiographic duties assisting radiologist**			
d) **Assisting in sterile procedures**			
f) **Cleaning of equipment**			
g) **Preparation of equipment and accessories for examination**			
h) **Counselling**			
i) **Image manipulation**			
j) **Administrative tasks**			
k) **Make an independent decision for supplementary techniques to be undertaken**			
o) **Decide independently to undertake a different examination than the one requested.**			
p) **Management**			
q) **Other (please specify)**			

A11. Please list **up to THREE** main **attributes** you feel you need in your job.

i)

ii)

iii)

A12. List any aspects of **YOUR ROLE** you think ***should*** be performed by someone else.

.....

.....

.....

A12. What activities currently performed by someone else do you think **YOU *should*** do (with appropriate training)?.....

.....

.....

A13. What activities do **YOU undertake** which your initial radiography training did not prepare you for?.....

.....

.....

A14. What activities did your initial radiography training prepare you for which **YOU DO NOT** undertake?.....

.....

.....

.....

A15. In your opinion, which of the following describes **YOU** (circle all that apply) Add any descriptors you feel appropriate

a) **Professional**

b) **Team member**

c) **Independent (autonomous) worker**

d) **Questioning of accepted practice**

e) **Researcher**

f) **Technician**

g) **Please add any not listed**.....

.....

A 16. Please respond to each of the following by placing a tick in the appropriate column.

When I qualified I.....

	Strongly agree	Agree	Disagree	Strongly disagree
i) was competent in general radiography				
ii) had no experience of specialised procedures				
iii) had only limited experience of specialised procedures				
iv) was competent in one specialised procedures-(please identify.....				
v) was competent in several specialised procedures-please identify.....				
vi) was competent in all specialised procedures				

Section B: Professional Roles

The following questions relates to the ROLE OF RADIOGRAPHERS IN GENERAL & OTHER MEMBERS OF THE HEALTHCARE TEAM.

B1. In your department, who ultimately decides on departmental policies (e.g. the accepted projections, referrals etc)? (Please circle the appropriate response).

i) Clinical Director **ii) Radiography Service Manger**

iii) Radiology Directorate **iv) Don't know**

v) Other.....

B2. Who organises the day to day running of the department?

i) Superintendent I **ii) Superintendent II**

iii) Superintendent III **iv) Senior 1 / Superintendent IV**

v) Radiography Services Manager **vi) I do**

vii) Other (please state).....

B3. List any aspects of the **clinical radiographer's role** you think ***should*** be performed by :

a) radiography helpers:.....

.....

.....

b) radiography technicians/practitioners (i.e. a person trained to undertake some radiography)

.....

.....

.....

c)someone else (please identify).....

.....

.....

.....

B4. What activities or skills currently performed by someone else do you think **clinical radiographers *should* do** (with appropriate training)

.....

.....

.....

B5. Do you think that.....

	Strongly Agree	Agree	Disagree	Strongly Disagree
a) Role development of radiographers should be actively encouraged?				
b) Most radiographers want to develop their roles?				
c) Other professionals are obstructing the role development of radiographers?				
d) If radiographers continue to develop their roles part of their existing role will have to be undertaken by another suitably trained category of staff?				

Section C: Radiography Education

C1. Please respond to the following

	Very well	Well	Poorly	Very poorly
a) How well did your radiography education (training) prepare you for your role when you first qualified?				
b) How well did your radiography education (training) prepare you for your role at later stages in your career?				
c) How do you think radiographers qualifying now perform in the workplace?				
d) How well does present day radiography education (training) prepare those qualifying for their role when they first qualify?				
e) How well does present day radiography education (training) prepare radiographers for their role at later stages in their career?				

C2.Please respond to each of the following

Radiographers qualifying now should be:

	Strongly agree	Agree	Disagree	Strongly disagree
i) Competent in general radiography				
ii) Have no experience of specialised procedures				
iii) Have only limited experience of specialised procedures				
iv) Competent in one specialised procedure				
v) Competent in several specialised procedures				
vi) Competent in all specialised procedures				

Examples of specialised procedures referred to are MRI, CT, Ultrasound,Nuclear Medicine, Cardiac Catheterisation, Angiography etc.

C3.What do you believe is not included sufficiently (or at all) in present undergraduate radiography education (training)?.....

.....

.....

C4.What do you believe should be excluded or reduced in present undergraduate radiography education (training)?.....

.....

.....

Section D: Personal Background

This next section will provide valuable information when analysing the responses to the questionnaire. I can assure you all information will remain anonymous and held in strictest confidence.D1 must be completed if you are willing to be interviewed

D1. Name.....

D2. Place of Work.....

D3. Please indicate your grade

i) **Radiographer** ii) **Senior 2** iii) **Senior 1**

iv) **Super 3** v) **Super 2** vi) **Other**.....

D4. Are you working:

i) **Full Time** ii) **Part time** iii)_**Job share?**

iv) **Other(please specify)**.....

D5. Is your contract : i) **Temporary** ii) **Permanent** iii) **Fixed Term**

iv) **Other (please specify)** .....

D6. Please state your contracted hours per week. ☐

D7. Please list all post school qualifications with dates (years) obtained.

Qualification	Year obtained	Awarding Body

D8. Please state any **current** qualifications being studied for or courses being undertaken.

Qualification/Course	Expected date of Completion	Awarding Body / Organising Body	If NON tick bel

D9. Please list any study days, short courses or conferences you have attended in the last 2 years

Title of Day/Course	Main Theme	Approximate date	If NONE please tick below

D10. Excluding research completed as part of a qualification, please list any research activities you have completed or are currently undertaking.

Title of Research	Dates (approx.)	NONE (please tick)

D11. Please list all posts to present giving grade, location and approximate dates.

Post	Grade	Location	Date

D 12. I *would / would not be willing to take further part in this study and be interviewed.

***I have completed D1 & D2 so I may be contacted.**

Thank you very much for completing this questionnaire. I am very grateful to you for giving up your valuable time. If you have consented to be interviewed I will contact you in the near future.

Thank you very much for completing this questionnaire. I am very grateful to you for giving up your valuable time. If you have consented to be interviewed I will contact you in the near future.

Please return this completed questionnaire in the envelope provided.

Shaaron Pratt
Director of Undergraduate Studies
Department of Radiography Education
School of Healthcare Studies
U.W.C.M..
Heath Park
Cardiff. CF14 4XN

Questionnaire Distributed to Managers
Section A: Personal Role and Responsibilities

Where an option is offered please circle the appropriate response. Please answer every question. Where you feel unable to answer or your response is 'none' please indicate as such

This first section relates to YOUR role

A.1

a) Please place a tick against clinical work presently undertaken.

	✓		✓
i) General		**viii) Interventional Radiography**	
ii) A & E		**ix) IVU**	
iii) GI Contrast Studies		**xi) Mammography**	
iv) DVI		**xii) Cardiac Catheterisation**	
v) CT		**xiii) Ultrasound**	
vi) MRI		**xiv) RNI**	
vii) Mobile (including theatre)			
Other (please state).....			

b) What proportion of your time is spent on clinical work in total?

75%+ **60%-74%** **45%-59%**

30%-44% **15%-29%** **0-14%** **NONE**

A2. Please **delete** any of the following, which would **NOT** be used to describe your current role or part of it. Please add any descriptors not listed

Budget holder
Human resource manager
Administrator
Clinical radiographer
Statistician
Decision-maker
Questioner of accepted practice
Professional
Team member
Leader
Independent Worker
Researcher
Committee member
Team Builder
Other (please state).....

A3. Please indicate how many staff in each discipline are ultimately answerable to you? If None please indicate with a zero.

Radiography ☐ **Administrative** ☐

Helper/ support worker ☐ **Nursing** ☐

Ancillary ☐ **Other** ☐

A4.a) Who are you directly accountable to on a daily basis? **(please tick)**	
i) District I	
ii) District II	
iii) District III	
iv) Business Manager	
v) Radiography Services Manager	
vi) Clinical Director	
vii) Superintendent Radiographer I	
viii) Superintendent Radiographer II	
ix) Superintendent Radiographer III	
x) Other-please specify.....	

A5. Please circle any out of hours duties that you participate in

(i) Evenings **(ii) Nights** **(iii) On call from Home**

(iv) Saturday Morning **(v) Weekends** **(vi) Other (please state).....**

vii) None

A6. Please state the average number of hours you work **in total** per week. ☐

A7. Please circle any role development activities you routinely perform, adding any not listed.

If none please indicate

(i) Intravenous Injecting **(ii) Reporting** **(iii) Red-Dot**

(iv) Barium Enemas. **(v) Counselling** **(vi) Barium Meals**

(viii) Other (please specify).....

ix) None

A8. Please state any additional responsibilities (e.g. manual handling co-ordinator, training, radiation protection supervisor, supervision / assessment of students, committee member etc.)

.....

.....

.....

A9. How (if at all) is your job different to that of other managers/radiographers of the same grade?

.....

.....

.....

A.10.Please examine the list of daily activities of some clinical radiographers With reference to **YOUR ROLE** indicate how often you undertake the following Please add any activities not listed

	Frequently	**Occasionally**	**Never**
a) **Practical Aspects of general patient care**			
b) **Observation activities e.g. taking blood pressure, temperature etc.**			
c) **Non radiographic duties assisting radiologist**			
d) **Assisting in sterile procedures**			
f) **Cleaning of equipment**			
g) **Preparation of equipment and accessories for examination**			
h) **Counselling**			
i) **Image manipulation**			
j) **Administrative tasks**			
k) **Make an independent decision for supplementary techniques to be undertaken**			
o) **Decide independently to undertake a different examination than the one requested.**			
p) **Management**			
q) **Other (please specify)**			

A.11. Please list **up to THREE** main attributes you feel you need in your job.

i)

ii)

iii)

A.12.i)List any aspects of **YOUR ROLE** you think ***should*** be performed by someone else.

.....

.....

.....

A.12 ii). What activities currently performed by someone else do you think **YOU *should*** do (with appropriate training)? .....

.....

.....

A.13. What activities do **YOU undertake** which your initial radiography training did not prepare you for? If none, please indicate.....

.....

.....

A14. What activities did your initial radiography training prepare you for which **YOU DO NOT** undertake? If none please indicate.....

.....

.....

.....

A15. In your opinion, which of the following describes **YOU** (circle all that apply)

a) **Professional**

b) **Team member**

c) **Independent (autonomous) worker**

d) **Questioning of accepted practice**

e) **Researcher**

f) **Technician**

g) **Please add any descriptors not listed.....**

.....

A 16. Please respond to each of the following by placing a tick in the appropriate column.

When I qualified I.....

	Strongly agree	Agree	Disagree	Strongly disagree
i) was competent in general radiography				
ii) had no experience of specialised procedures				
iii) had only limited experience of specialised procedures				
iv) was competent in one specialised procedures-(please identify.....				
v) was competent in several specialised procedures-please identify.....				
vi) was competent in all specialised procedures				

Section B: Professional Roles

The following questions relates to the ROLE OF RADIOGRAPHERS IN GENERAL & OTHER MEMBERS OF THE HEALTHCARE TEAM.

B1. In your department, who ultimately decides on departmental policies (e.g. the accepted projections, referrals etc)? (Please circle the appropriate response).

i) Clinical Director **ii) Radiography Service Manger**

iii) Radiology Directorate **iv) I do**

v) Other.....

B2 Who organises the day to day running of this department?

i) I do **ii) Superintendent I**

iii) Superintendent II **iv) Superintendent III**

v) Superintendent IV/Senior I **vi) Radiography Services Manager**

vii) Other.....

Section C: Radiography Education

C1. Please respond to the following

	Very well	Well	Poorly	Very poorly
a) How well did your radiography education (training) prepare you for your role when you first qualified?				
b) How well did your radiography education (training) prepare you for your role at later stages in your career?				
c) How do you think radiographers qualifying now perform in the workplace?				
d) How well does present day radiography education (training) prepare those qualifying for their role when they first qualify?				
e) How well does present day radiography education (training) prepare radiographers for their role at later stages in their career?				

C2. Please respond to each of the following

Radiographers qualifying now should be:

	Strongly agree	Agree	Disagree	Strongly disagree
i) Competent in general radiography				
ii) Have no experience of specialised procedures				
iii) Have only limited experience of specialised procedures				
iv) Competent in one specialised procedure				
v) Competent in several specialised procedures				
vi) Competent in all specialised procedures				

Examples of specialised procedures referred to are MRI, CT, Ultrasound,Nuclear Medicine, Cardiac Catheterisation, Angiography etc.

C3. What do you believe is not included sufficiently (or at all) in present undergraduate radiography education (training)?.....

.....

.....

C4.What do you believe should be excluded or reduced in present undergraduate radiography education
(training)?.....

.....

.....

C5. Do you feel radiographers, in general, are able to participate in sufficient post graduate education? (study days, courses, conferences etc) **YES / NO**

Section D : Personal Background

D1. Name.....

D2. Place of Work.....

D3. Please indicate your grade

i) Super 3 **ii) Super 2** **iii) Super 1**

iv) Management **v) Other**.....

D4. Are you working :

i) Full Time **ii) Part time** **iii) Job share?**

iv) Other (please specify).....

D5. Is your contract : **i) Temporary** **ii) Permanent** **iii) Fixed Term**

iv) Other (please specify).....

D6. Please state your contracted hours per week. ☐

D7. Please list all post school qualifications with approximate dates (years) obtained.

Qualification	**Year obtained (approx. if possible)**	**Awarding Body (if known)**

D8. Please state any **current** qualifications being studied for or courses being undertaken.

Qualification/Course	**Expected date of Completion**	**Awarding Body / Organising Body**	**If NONE please tick below**

D9. Please list any study days, short courses or conferences you have attended in the last 2 years

Title of Day/Course (if known)	Main Theme	Approximate date, if known	If NONE please tick below

D10. Excluding research completed as part of a qualification, please list any research activities you have completed or are currently undertaking.

Title of Research	Dates (approx. if known)	NONE (please tick)

D11. Please list all posts to present giving grade, location and approximate dates.

Post	Grade	Location	Date

D12. I *would / would not be willing to take further part in this study and be interviewed.

(please delete as appropriate)

***I have completed D1 & D2 so I may be contacted.**

Thank you very much for completing this questionnaire. I am very grateful to you for giving up your valuable time. If you have consented to be interviewed I will contact you in the near future.

Please return this completed questionnaire in the envelope provided.

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Appendix Six

Questionnaire Responses

Radiographers Responses

Managers Responses

Clinical Radiographers' Questionnaire Responses

Order of Responses Department A=Rad/Sen2/Sen1/Sup3 Department B=Rad / Sen2/Sen 1 Department C- Rad/Sen2/Sen1,	**A n=22**	**B n=6**	**C n=10**
A1 –Clinical Work Undertaken			
i) General	2/6/1/4	0/2/3	5/2/3
ii) A&E	3/5/2/3		5/2/3
iii) GI Contrast Studies	2/5/1/3	0/1/1	1/0/1
iv) DVI	1*/0/2/0		
v) CT	0/2/0/1	0/2/3	1/2/1
vi)MRI	0/0/0/0	0/2/3	0/1/1
vii)Mobile	2/5/1/2	0/1/1	3/1/3
viii)Interventional Radiography	1/0/1/1	0/2/2	1/0/0
ix) IVU	1/3/0/3	0/1/0	4/2/3
x) Mammography	0/3/0/2	0/2/2	1/0/0
xi) Cardiac Catheterisation	1/0/1/0		
xii) Ultrasound	1/0/3/0	0/1/0/0	
xiii) RNI	0/1/2/1		0/0/1
*=Occasionally			
A.1. b) Rotation			
i) Weekly	0/1/0/2	0/2/2	3/2/2
ii) Fortnightly	1/2/1/1		0/0/1
iii) Monthly	0/0/0/0		
No rotation (specialised area)	4/3/4/0	0/1/2	0/0/1
Daily rotation	0/0/1/0		2/0/0
Two weeks out in ten	0/0/1/0		
Monthly and fortnightly rotation	0/1/0/1		
Varies from week to week	0/0/0/1		
A2 a) Time spent in each area			
Equal	3/3/4/1	0/1/2	1/1/1
Unequal	2/1/0/3		4/1/3
No Rotation	0/2/3/0	0/1/2	
b) **Most time spent in**			
A&E	1/3/0/0		0/0/1
General	0/1/0/1		3/1/2
GI Studies			0/0/1
Ultrasound	0/0/2/0		
RNI	0/0/2/0		0/0/1
CT	0/1/1/0	0/0/1	0/0/1
Catheter lab	0/1/1/0		
Mammo & general/Mobile	0/2/0/1		
Mobiles, general & A&E	0/0/0/1		
MRI permanently		0/1/0/0	0/0/1
Not sure/don't know		0/0/1	1/0/0

A3 Number of staff answerable			
i)No radiographers	1/2/4/2	0/2/1	2/0/1
One Radiographer			0/1/1
Two radiographers	1/0/2/0		
Three radiographers	1/2/0/0		
Four radiographers	0/0/0/0		
Five radiographers	1/2/0/0	0/0/1	
Six radiographers	0/0/0/0	0/0/2	
Seven radiographers	0/0/0/0		
Nine radiographers	1/0/0/0		0/1/0
Fourteen radiographers			0/0/1
No response			
None	0/0/0/1	0/0/	
ii) No helper/darkroom	3/1/3	0/2/1	0/0/1
One helper/darkroom	1/2/4		1/1/0
Two helpers/darkroom	0/0/0	0/0/3	2/1/2
Three helpers/darkroom	0/1/0		
Four helpers/darkroom	0/0/0		0/0/1
Five helpers/darkroom	0/1/0		
Six helpers/darkroom	0/0/0		
Seven helpers/darkroom	0/1/0		
Eight helpers	0/0/0/1		
Ten helpers	1/0/0/0		
No response	0/0/0/3		1/0/0
iii) No Ancillary	5/6/6/1	0/2/4	1/2/4
One Ancillary	0/0/0/0		
Two Ancillary	0/0/0/0		
No response	0/0/0/3		1/0/0
iv) No Administrative	3/4/4/1	0/2/1	1/2/4
One Administrative	1/2/1/0		
Two Administrative	0/0/1/0	0/0/3	1/0/0
Three Administrative	1/0/0/0		
No response	0/0/0/1		1/0/0
v) No Nursing	5/6/6/1	0/2/0	1/2/4
One Nursing	0/0/0/0		
Two Nursing	0/0/0/0		
Three Nursing	0/0/0/0		
No response	0/0/0/4		1/0/0
A4. a) Directly accountable to			
i) Radiography Service manager	4/0/0/1	0/1/4	1/0/2
ii) Businesses Manager	1/0/0/0		
iii) Superintendent I	1/0/0/2		2/0/2
iv) Superintendent II	1/1/1/2		1/1/1
v) Superintendent III	0/2/6/2	0/1/1	3/1/4
vi) Superintendent IV/Senior I	0/2/0/2		3/1/0
vii) Senior II	1/1/0/0		3/0/0
viii) Clinical Director	1/1/0/0		1/0/2

A4b) Decides what respondent does daily			
i) Radiography Service manager	1/0/0/0	0/1/1	
ii) Business manager	0/0/0/0		
iii) Superintendent I	1/0/0/2		
iv) Superintendent II	0/1/0/1		
v) Clinical Director	0/1/0/0		
vi) Senior II	0/0/0/0		4/0/0
vii) Superintendent IV/Senior 1	0/2/0/1	0/0/1	2/1/0
viii) Superintendent III	1/1/5/1		1/1/3
Myself	2/1/1/0		0/0/1
No response		0/1/1	
Radiologist & myself		0/0/1	
A5. Out of Hours duties			
(i) Evenings	3/5/2/4		1/1/2
(ii) Nights	1/4/3/4	0/0/1	2/2/3
(iii) On call from Home	5/2/5/4	0/2/4	0/1/3
(iv) Saturday Morning	2/1/0/4		1/1/3
(v) Weekends	1/4/4/4	0/0/1	0/1/2
Other: Bank	0/1/0/0		
None	0/1/0/0		2/0/1
A6. Hours worked in total per week			
21	0/1/0/1	0/1/0	
22	0/0/0/1		
28	0/0/1/0		
29			1/0/0
31.5	0/0/1/0		
35	1/1/1/0	0/0/4	2/1/2
36	0/0/0/1	0/2/0/0	
37	0/0/1/0		
38	1/0/0/0		
40	0/2/2/0		1/0/0
41	1/0/0/0		
43			0/0/1
45			1/0/0
48	0/1/0/0		
50	0/1/1/0		0/1/0
50+	2/0/0/0		0/0/1
67	0/0/0/1		
A7. Role development activities			
(i) Intravenous Injecting	2/2/4/0	0/2/4	1/2/4
(ii) Reporting	1/1/3/0		0/0/1
(iii) Red-Dot	1/3/2/1		3/2/5
(iv) Barium Enemas.	1/0/0/0		0/0/1
(v) Counselling	1/0/1/0	0/1/1	
(vi) Barium Meals	0/0/0/0		
vii) Other (please specify)	0/0/0/0		
None undertaken	1/1/0/3		2/0/0
IT Training/system assessment-development	1/0/0/0		

A8. Additional responsibilities			
None	1/2/2/4		3/0/2
Appointment Booking	0/0/2/0	0/1/0/0	0/0/1
Audit & Clinical effectiveness			0/1/0
Deputise for radiology I.I. manager	0/0/1/0		
Health & Safety Advisor/Rep	0/1/0/0	0/0/1	0/1/0/
IRMER Policy Group	0/1/0/0		0/1/0
Manual handling co-ordinator	0/1/0/0		
Medical & pharmacy supplies ordering		0/0/1	
Organisation of mammography service		0/0/1	
Paediatric Liaison	0/0/1/0		
QA Duties	0/1/0/0	0/0/1	0/1/0
Radiation protection supervisor	2/0/0/0		
Supervision & assessment of students	3/1/0/0	0/1/0/0	2/2/2
Training of staff	1/0/0/0		0/0/1
CPD co-ordinator	1/0/0/0		
BNMS education	1/0/0/0		
Member of a multidisciplinary group		0/1/0	
Organisation of workload on nights	0/1/0/0		
School Education Committee member	1/0/0/0		
Teaching SPR's how to do barium enemas	1/0/0/0		
PACS & RADIS manager	1/0/0/0		
No response	0/0/2/0		
A9. How job differs			
No difference	2/0/0/3		2/1/1/0
No other radiographer of the same grade to compare to			0/1/0/0
Approach different to this type of patient-practically and emotionally		0/1/1	
Arranging appointments			1/0/0
Experienced in all areas especially mammography	0/0/0/1		
I do CT + undertake barium enema studies			0/0/1
Don't do mammography		0/0/1	
Full time in RNI + cover I.T. in call-call for C.R. system.	0/0/1/0		
I work in CT			0/0/1
I am not competent in CT or another modality but other basic grade radiographers are			1/0/0
In charge of chest room	0/1/0/0		
In charge of running CT scanner		0/0/1	
A large commitment to quality and facilitation of new techniques & equipment in C.T.	0/0/1/0		
Informally advise clinicians on radiographic appearance	0/1/0/0	0/1/0/0	
Less clinical time because of other roles	0/1/0/0		
More time in A&E and mammography	0/1/0/0		
No supervision of higher grade staff whilst on duty	0/1/0/0		
No radiologist on site so must take decisions re justification of examination etc.	0/1/0/0		
Not within my own department-different from DGH due to type of patient at this specialised hospital		0/1/0	
Ordering supplies		0/0/1	
Specialist MRI			0/0/1
Specialise in RNI			0/0/1

A9. How job differs cont'd Specialised modality-responsible for RNI services		1/0/0/0		
Reporting most of the scans I perform		0/0/1/0		
Totally different		1/0/1/0		
Work single handed in ultrasound and geriatric		0/0/1/0		
I am not yet competent in mobiles/theatre & IVU as I'm newly qualified				1/0/0
No response		1/0/2/0		
A10. Respondents Daily activities				
a) Practical Aspects of general patient care	Frequently	4/5/6/4	0/2/4	5/2/4
	Sometimes	1/1/1/0		
	Never	0/0/0/0		
b) Observation activities e.g. taking blood pressure, temperature etc.	Frequently	0/0/2/0		
	Sometimes	3/0/2/2	0/0/2	2/0/0
	Never	2/6/3/2	0/2/2	3/2/4
c) Non radiographic duties assisting radiologist	Frequently	3/2/2/3	0/1/2	0/0/1
	Sometimes	1/3/3/0	0/0/2	1/1/2
	Never	1/1/2/2		3/0/1
d) Assisting in sterile procedures	Frequently	1/2/0/1	0/0/1	0/0/1
	Sometimes	2/1/5/2	0/1/2	2/0/0
	Never	1/3/2/1	0/1/1	3/2/3
f) Cleaning of equipment	Frequently	3/5/5/2	0/2/3	3/0/3
	Sometimes	1/1/1/2	0/0/1	2/2/1
	Never	0/0/0/0		
g) Preparation of equipment and accessories for examination	Frequently	4/4/6/3	0/2/3	2/0/3
	Sometimes	0/2/0/1	0/0/1	3/2/0
	Never	1/0/1/0		0/0/1
h) Counselling	Frequently	0/0/0/0	0/1/1	0/0/2
	Sometimes	2/1/5/3	0/1/0	1/0/0
	Never	3/5/2/1	0/0/2	4/2/2
i) Image manipulation	Frequently	4/3/5/2	0/1/2	5/2/4
	Sometimes	1/2/0/2	0/0/2	
	Never	0/0/2/0		
	No response	0/1/0/0		
j) Administrative tasks	Frequently	4/5/4/3	0/1/4	4/1/3
	Sometimes	0/0/2/1		1/1/1
	Never	0/1/1/0		
k) Make an independent decision for supplementary techniques to be undertaken	Frequently	5/3/4/2	0/2/3	2/1/3
	Sometimes	0/2/2/1	0/0/1	3/1/1
	Never	1/1/1/1		
o) Decide independently to undertake a different examination than the one requested.	Frequently	2/2/2/1	0/1/1	1/2/0
	Sometimes	2/3/4/1	0/0/3	3/0/2
	Never	1/1/1/2	0/1/0	1/0/2
p) Management	Frequently	4/0/3/1	0/0/1	0/1/0
	Sometimes	1/4/1/0	0/2/2	2/1/4
	Never	0/2/3/3	0/0/1	3/0/0
q) Other (please specify)	Frequently			

	Sometimes		
	Never		
A11 Attributes needed in job			
Ability to deal with all types of patients	0/0/1/0	0/1/0/0	1/1/0
Ability to organise	1/1/0/0		0/0/1
Ability to use initiative	0/1/1/0	0/1/0/0	1/0/2
Ability to work under pressure	0/1/1/0		
Ability to adapt radiographic technique	0/2/0/0		1/1/1
Ability to co-operate and liase with other departments	0/1/0/0		
Ability to maintain good safe efficient working practices			0/0/1
Adaptability	1/0/1/0		
Ambition			1/0/0
Caring nature			2/0/0
Common sense	0/1/0/0	0/0/1	
Compassion	0/0/3/0	0/2/0	0/0/1
Competence	0/0/0/1		1/0/0
Concentration	0/0/1/0		
Confidence			2/0/0
Decision making skills	0/0/1/0		1/0/0
Dedication			1/0/1
Determination	1/0/0/0		
Disease process knowledge		0/0/1	
Empathy	0/2/1/3	0/1/0/0	
Experience	0/0/0/1	0/0/1	
Flexibility	0/1/1/1	0/0/1	
Good communication skills	2/1/0/1	0/1/0/0	1/0/2
Good communication skills with clinicians	0/1/1/0		
Good working relationship	1/0/1/0		
High standards			0/0/1
Intellectual ability	0/1/0/0		
Initiative	0/2/1/0		
Intimate knowledge of CT	0/0/1/0		
Knowledge of job	1/1/0/0		1/0/0
Logic	0/0/0/1		
Motivation	0/0/1/0		
Organisational skills	0/1/0/1	0/0/1	
Patience	2/0/5/1	0/0/4	2/0/1
Patient care	1/1/0/1		
Prioritise tasks		0/0/1	
Professional approach		0/1/0	1/0/0
Relate & deal with people of all backgrounds	0/1/0/0		
Resilience	1/0/0/0		
Sense of humour	2/0/5/0		
Tact	2/0/0/0	0/1/0	
Team worker	0/2/0/0	0/1/0	1/0/0
Think independently	0/1/0/0		0/0/1
Think methodically			1/0/0
Transactional management skills	1/0/0/0		
Versatile			0/0/1

A12a). Aspect of role should be performed by someone else			
None	1/1/1/2	0/1/2	4/2/3
Administration	0/1/0/1	0/1/0/0	
Assisting in barium enemas	1/0/0/0		
Changing patients	0/3/2/0		
Chasing clinicians for more information		0/0/1	
Checking scans with radiologist	0/0/1/0		
Cleaning the rooms	0/1/0/0		1/0/0
Collecting patients	0/0/0/1		
Film Coding			0/0/1
Finding films	0/0/1/0	0/0/1	
General Radiography	0/1/0/0		
Helpers roles	0/1/0/0		
I.T duties as it's difficult being in two places at once	0/0/1/0		
Injecting (Radiographic assistants)	0/0/1/0		
Pushing trolleys	0/1/0/0		
Registering private patients for cardiac catheterisation	1/0/0/0		
Returning films to the ward	0/0/0/1		
Room preparation	0/1/1/0		
Secretarial duties	0/0/1/0		
Sorting out radiologists queries (they should do it themselves)		0/0/1	
No response	1/0/2/0		
A12b.Activities respondent thinks they should do			
None	1/3/0/1	0/1/2	1/0/0
A&E Reporting	0/1/0/0		2/1/0
Barium enemas			1/0/0
Checking / vetting forms	0/0/2/0		
Clerical work	1/0/0/0		
Clinical training & induction of new staff	0/1/0/0		
C.T. Film reporting	0/0/1/0		
Decide what films should be taken-not referrer	0/1/0/0		
Extended reporting	1/0/1/0		
Film reading-mammography		0/0/1	
Film reporting	0/2/0/0	0/1/1	2/1/2
Interpretation of films	0/0/1/0		
Interventional radiography		0/0/1	
I.V. injecting	0/0/0/2		1/0/0
More responsibility regarding RADIS- e.g. deleting visits/merging data			0/1/0
Nursing side of things	1/0/0/0		
Performing IVU's	1/0/1/0		1/1/0
Performing cystograms	1/0/0/0		
Quality assurance	0/1/0/0		
Red Dot			0/0/1
Reporting MRI			0/0/1
Reporting RNI			0/0/1
Radio pharmaceutical reporting	0/0/1/0		
System admin functions	1/0/0/0		

Theatre set ups	1/0/0/0		
Vet forms	0/0/1/0/		
Ultraosund reporting	0/0/1/0/		
Angiograms (diagnostic)	0/0/1/0		
No response	0/0/2/1		
A13 Activities undertaken initial training did not train respondent for			
None	0/1/0/0	0/1/0/0	1/0/0
All	1/0/0/0		
Adaptation of technique			1/0/0
Admin/paperwork	0/0/0/1		
Air Gap technique CXR's	0/0/0/1		0/1/0
Audit			0/1/0
None	1/0/0/0		
Attending meetings	0/1/0/0		0/0/1
Barium enemas	1/0/0/0		1/0/1
Breaking bad news to patients	0/0/1/0		
CR	0/0/0/1		
C.T.	0/1/0/0	0/1/2	
Counselling minor	0/0/1/1		
Film interpretation	0/0/1/0		
Hoists	0/0/0/1		
I.T. within radiography	0/0/1/0		0/0/1
I.V. injections/infusions	2/1/4/0	0/1/3	1/2/4
Mammography	0/1/0/1	0/0/3	
Manual handling	0/1/0/0		
M.R.I.		0/1/1	0/0/1
Nuclear medicine	0/0/1/0		
Nursing aspects on a practical level			0/1/0
Picture Archiving System (PACS)			1/0/0
Patient care			0/1/0
Patient monitoring	0/0/1/0		
Pathology recognition	0/1/1/0		
Post processing	0/0/1/0		
Red Dot reporting	0/2/0/1		
R.N.I. as a whole	1/0/0/0		
Supervisory role	0/1/0/0		
Training in specialised equipment	0/1/0/0		
Ultrasound	0/0/1/0/	0/1/0	
Writing reports	0/0/2/0		
None	0/0/0/1		
No response		0/0/1	
A14. Activities trained for but which are not undertaken			
None	2/2/3/2	0/1/3	0/1/2
Building clockwork timers		0/0/1	
CT head examination			1/0/1
Darkroom activities	0/0/0/1		
Equipment module	0/0/1/0		
Everything except RNI	0/0/1/0		

Extensive photography		1/0/0/0		
Film/screen choices		0/1/0/0		
Film/screen tests		0/1/0/0	0/1/0/0	
General nursing duties		2/1/0/0		1/0/0
Mammograms				0/0/1
Management				1/1/1
Out of date screening techniques-useful if current practices unachievable		1/0/0/0		
Physics involved with equipment		0/1/0/0		
Sterile techniques		0/1/0/0		1/0/0
Theatre work			0/0/1	
Ward nursing		0/1/0/0		
Wet processing		0/0/1/1		
No response		1/1/2/0	0/0/1	
A15. Respondent descriptors				
a) Professional		5/6/7/4	0/2/4	4/2/4
b) Team member		5/6/6/4	0/2/4	5/2/4
c) Independent (autonomous) worker		4/2/3/3	0/1/0/0	2/1/3
d) Questioning of accepted practice		4/4/4/3	0/2/3	4/2/4
e) Researcher		2/1/1/1	0/1	1/1/2
f) Technician		2/2/2/3	0/0/2	2/0/3
Adaptable		0/2/0/1		
Hard working		0/0/1/0		
Organised		0/1/0/1		
Person who treats patients as individuals		0/1/0/0		
A16 On qualification respondent...				
i) was competent in general radiography	Strongly agree	2/0/2/2	0/1/4	2/1/2
	Agree	2/6/5/1	0/1/0	3/0/1
	Disagree	1/0/0/1		0/1/0
	Strongly disagree	0/0/0/0		
	No response	0/0/0/0		0/0/1
ii) had no experience of specialised procedures	Strongly agree	0/1/1/0		
	Agree	0/2/1/0	0/0/1	
	Disagree	5/3/5/4	0/1/3	5/2/3
	Strongly disagree	0/0/0/0	0/1/0/0	0/0/1
	No response	0/0/0/0		
iii) had only limited experience of specialised procedures	Strongly agree	1/1/0/0		1/1/2
	Agree	4/4/5/3	0/2/4	3/0/2
	Disagree	0/0/1/1	0/0/1	1/0/0
	Strongly disagree	0/1/1/0		
	No response	0/0/0/0		
iv) was competent in one specialised procedure *theatre(1) **CT Head (1)	Strongly agree	0/0/0/1 *		1**/0/1**
	Agree	0/0/0/0	0/0/1	1**/1/0
	Disagree	4/2/4/2	0/1/1	2/0/1
	Strongly disagree	1/4/2/0	0/1/2	1/0/2
	No response	0/0/1/0		
v) was competent in several specialised procedures *Ba meals / enemas, ERCP, theatre work, IVP's	Strongly agree	1***/0/0/0		
	Agree	0/0/0/0	0/0/1	1*/0/1**
	Disagree	2/2/4/2	0/1/0	2/0/1

**Fluoroscopy & IVU ***CT Head, ERCP	Strongly disagree	2/3/3/1	0/1/3	2/1/1
	No response	0/0/0/0		0/1/0
vi) was competent in all specialised procedures	Strongly agree	0/0/0/0		
	Agree	0/0/0/0		
	Disagree	2/1/4/2	0/0/1	2/0/0
	Strongly disagree	3/5/2/0	0/2/3	3/2/1
	No response	0/0/0/0		0/0/2
B1. Individual who decides on departmental policies				
i) Clinical Director		1/4/2/2	0/1/0	3/0/2
ii) Radiography Service Manger		0/1/1/0	0/1/1	2/1/1
iii) Radiology Directorate		2/2/2/0	0/0/1	1/0/2
iv) Don't know		0/0/0/2		
v) Cardiologist/Radiologist		1/0/0/0		
Depends on which way the wind is blowing		1/0/0/0		
ARSAC Licence holder		0/1/2/0		
Joint decision between radiologist, senior2 & Super 4				1/1/0
B2. Individual who organises day to day running of the department				
i) Superintendent I		0/0/1/1		1/0/0
ii) Superintendent II		1/2/2/1		
iii) Superintendent III		2/4/2/0	0/1/0/0	3/1/4
iv) Senior 1 / Superintendent IV		0/1/0/1	0/1/3	2/1/1
v) Radiography Services Manager		0/1/0/0	0/0/1	
vi) I do		2/0/0/0		0/1/0
vii) Nurses		1/0/0/0		
All in room (RNI)		0/2/2/0		
Don't know		0/0/0/1		
B3.a) Radiography helpers should perform these aspects of clinical radiographers role	None	2/3/1/0		4/2/3
	Assist in screening rooms	2/1/1/1		
	Assist radiologist with ultrasound	0/0/1/0	0/0/1	
	Basic radiography (Chest)	1/0/1/0		
	Basic radiography	0/0/0/1		
	Change collimators in RNI	0/0/1/0		
	Check images with consultant in RNI	0/0/1/0		
	Cleaning of equipment			1/0/0
	Contamination checks (RNI)	0/0/1/0		
	Darkroom duties	0/2/1/0	0/0/1	1/0/0
	Data input into RADIS	1/0/0/0		
	Film Coding			0/0/1
	Film processing	0/0/0/2		
	General care e.g. escort to toilet	0/1/1/0	0/1/3	
	I.V. Injections	0/0/1/0		
	Paperwork	0/0/0/1		

	Passing radiologists barium	0/1/0/0		
	Patient preparation/changing	1/1/3/2	0/1/3	1/0/0
	Plain film radiography	0/1/0/0		
	Preparation of cubicles			1/0/0
	Preparation of room	0/1/1/0		1/0/0
	Preparation of hard copy images	0/0/1/0		
	Record resources in RNI	0/0/1/0		
	Transport isotopes to/from Med Physics (RNI)	0/0/1/0		
	Working under direct radiological supervision e.g. IVU's, barium lists	0/1/0/0		
	No response	0/0/1/0		
b) radiography technicians/practitioners should perform	None	2/4/3/0	0/2/3	3/1/3
	Abdomen-basic	1/0/1/0		1/0/0
	Assist radiologist with ultrasound		0/0/1	
	Assist radiologist with screening work in screening rooms			
	Basic appendicular radiography	0/0/1/1		0/1/0
	Basic radiography	0/0/1/2		
	Basic radiography-chest	1/0/1/1		
	Darkroom duties-sorting out chemical and film	0/1/0/0		
	Help in barium enema and other screening techniques	0/0/0/1		
	I.V injections	0/0/1/0		
	Non complicated examinations-chest extremities	1/0/1/0		
	Patient preparation/changing patients	0/1/0/0		1/1/0
	Position pt. For exam. put in film & set exposure	0/0/1/1		
	Preparation of room	0/1/0/0		
	Not sure			1/0/0
	No response	1/0/2/0		

c)	None	0/3/3/4	0/2/1	5/2/3
	Administration	0/2/0/0		
	Clerical staff/finding missing films/notes	0/0/1/0	0/0/2	
	Healthcare support worker-looking after patient's needs	0/1/0/0		
	Healthcare support worker-escort patients/keep company	0/1/0/0		
	Nurses-patient preparation	0/0/1/0		
	Nurses-positioning patients	0/0/1/0		
	Train more radiographers	0/0/1/0		
	No response	1/0/0/0	0/0/1	
B4 Clinical radiographers should perform these....				
	None			0/0/1
	Angiography (routine)	1/0/1/0		
	Barium enemas	1/2/1/1	0/1/0/0	2/0/1
	Barium meals	1/0/1/0	0/1/0/0	0/0/1
	All Barium studies	0/0/1/0		0/1/0
	Cytograms	1/0/0/0		
	DEXA scans	1/0/0/0		
	Film interpretation /post processing	0/0/2/0		
	Hickman lines	1/0/0/0	0/1/1	
	Interventional radiography	1/0/0/0	0/1/1	
	Issuing provisional reports	0/0/1/0		
	I.V. injecting			0/0/1
	IVU's	1/0/2/0		1/0/1
	Mammography reporting	0/0/0/1		
	Non imaging investigations	1/0/0/0		
	Radiopharmacy	1/0/0/0		
	Red Dot reporting			1/0/0
	Reporting	3/1/2/1		4/2/3
	Reporting some specialised studies	0/1/0/0		
	Request form vetting	0/0/1/0		
	Screening	0/0/0/1		
	No response	1/2/2/1	0/1/3	

a) Role development of radiographers should be actively encouraged?	Strongly agree	4/4/7/1	0/2/4	3/2/3
	Agree	1/2/0/3		2/0/0
	Disagree	0/0/0/0		
	Strongly disagree	0/0/0/0		
	No response	0/0/0/0		
b) Most radiographers want to develop their roles?	Strongly agree	2/1/0/1	0/2/0	1/0/0
	Agree	2/3/6/3	0/0/4	4/2/3
	Disagree	1/2/1/0		
	Strongly disagree	0/0/0/0		
	No response	0/0/0/0		
c) Other professionals are obstructing the role development of radiographers?	Strongly agree	0/2/2/0		0/0/1
	Agree	4/4/2/3	0/1/2	0/2/1
	Disagree	1/0/3/1	0/1/2	5/0/1
	Strongly disagree	0/0/0/0		
	No response	0/0/0/0		
d) If radiographers continue to develop their roles part of their existing role will have to be undertaken by another suitably trained category of staff?	Strongly agree	0/1/0/0		
	Agree	3/3/5/4	0/2/0	0/1/0
	Disagree	2/1/2/0	0/0/4	4/0/2
	Strongly disagree	0/1/0/0		1/1/1
	No response	0/0/0/0		
C1.				
a) How well did your radiography education (training) prepare you for your role when you first qualified?	Very well	1/ 4/2/2	0/1/3	1/1/1
	Well	4/ 2/5/2	0/1/1	3/1/2
	Poorly	0/0/0/0		
	Very poorly	0/0/0/0		
b) How well did your radiography education (training) prepare you for your role at later stages in your career?	Very well	2/1/1/0		
	Well	1/4/2/3	0/2/3	3/1/1
	Poorly	2/1/3/1		0/1/2
	Very poorly	0/0/0/0		
	No response		0/0/1	2/0/0
c) How do you think radiographers qualifying now perform in the workplace?	Very well	0/0/0/0	0/1/0/0	0/0/1
	Well	5/4/2/4	0/1/1	5/2/2
	Poorly	0/1/4/0	0/0/3	
	Very poorly	0/1/0/0		
d) How well does present day radiography education (training) prepare those qualifying for their role when they first qualify?	Very well	0/0/0/0	0/1/0/0	1/1/1
	Well	4/3/4/4		4/1/2
	Poorly	0/2/2/0	0/0/4	
	Very poorly	0/1/0/0		
Unable to comment			0/1/0	

e) How well does present day radiography education (training) prepare radiographers for their role at later stages in their career?	Very well	1/0/0/0		
	Well	1/ 2/2/2	0/1/2	4/2/0
	Poorly	2/4/3/2	0/O/2	0/1/2
	Very poorly	0/0/1/0		
Unable to comment			0/1/0	1/0/0
C2 Radiographers qualifying now should be				
i) Competent in general radiography	Strongly agree	4/5/6/4	0/2/4	3/1/3
	Agree	0/1/1/0		2/1/0
	Disagree	1/0/0/0		
	Strongly disagree	0/0/0/0		
	No response	0/0/0/0		
ii) Have no experience of specialised procedures	Strongly agree	0/0/0/0		0/0/0
	Agree	0/2/1/1		
	Disagree	3/4/5/3	0/1/3	3/2/2
	Strongly disagree	1/0/1/0	0/1/1	2/0/1
	No response	1/0/0/0		
iii) Have limited experience of specialised procedures	Strongly agree	0/3/0/0		1/2
	Agree	4/2/6/2	0/2/3	2/0/1
	Disagree	1/0/0/2	0/O/1	1/0/0
	Strongly disagree	0/1/1/0		1/0/1
	No response	0/0/0/0		
iv) Competent in one specialised procedure	Strongly agree	0/0/0/0		
	Agree	0/1/1/3		2/1/1
	Disagree	4/3/5/1	0/1/4	2/1/2
	Strongly disagree	0/1/1/0	0/1/0/0	
	No response	0/0/0/0		
v) Competent in several specialised procedures	Strongly agree	0/0/0/0		
	Agree	1/2/1/2	0/O/1	2/0/0
	Disagree	3/ 3/4/2	0/1/2	2/2/3
	Strongly disagree	0/1/2/0	0/1/0/0	1/0/0
	No response	1/0/0/0		
vi) Competent in all specialised procedures	Strongly agree	0/0/1/0		
	Agree	0/0/0/0		
	Disagree	3/2/4/3	0/1/3	3/1/3
	Strongly disagree	1/4/2/0	0/1/1	2/1/0
	No response	1/0/0/0		
C3 Not included sufficiently in undergraduate education				
Nothing		0/1/0/0		2/2/1
Anatomy		0/1/0/0		
Annual leave			0/O/1	
Basic radiography		0/1/0/0		
Being able to adapt/modify technique				1/0/1
Being part of the team			0/1/1	
Care of the patient		0/1/0/0		
Care of the patient (ward training)		0/0/0/1		1/0/0
Cognition of pathology on films		0/0/1/0		

Computed radiography		1/1/0/0		
Communication skills			0/0/1	
Counselling		0/0/1/0		
C.T.(more)		0/0/0/1		1/0/0
Exposures		1/0/0/0		
Health management module		1/0/0/0		
I.V. injecting		0/1/1/1	0/1/0/0	
I don't know the curriculum		0/0/2/1	0/1/2	
Nursing procedures				1/0/0
Old log books		0/0/1/0		
Out of hours work		0/1/0/0		
Pathology		1/0/0/0		0/0/1
Patient care		1/0/0/0	0/0/1	
Practical understanding of anatomy		0/0/1/0		
Practical training-more time should be spent in the department		1/0/1/0	0/0/1	
Radiographic Technique		0/1/0/0		
R.N.I. (more)		0/0/0/1		
Sterile procedures		0/0/0/1		
The 9-5 working week			0/0/1	
Theatre work				1/0/0
No response		0/2/2/0		
C4 Should be excluded or reduced in undergraduate education				
Nil/Nothing			0/1/1	2/1/2
Anatomy & technique should reflect the time many radiographers spend in special techniques		1/0/0/0		
CT Head				1/0/0
Don't know the curriculum		0/1/2/0	0/1/1	
Don't know		1/0/0/2	0/0/1	0/0/1
Equipment module		0/0/1/0		
Less theory of all aspects			0/0/1	
Some of the theory		1/0/1/0		
Management theory		0/1/0/0		2/0/0
Nothing/nil		1/0/0/0		1/0/0
No response		0/0/3/1		
Old techniques not used locally		1/0/0/0		
Physics (basic understanding would do)		0/1/0/1		1/1/0
Psychology		0/1/0/0		
C5. Are radiographers able to undertake sufficient post graduate education	YES	1/1/3/1	0/2/3	3/2/3
	NO	2/5/4/2	0/0/1	1/0/0
	No Response	1/0/0/1		1/0/0
D3 Grade				
i) Radiographer		5/0/0/0		4/0/0
ii) Senior 2		0/6/0/0	0/2/0/0	0/2/0
iii) Senior 1		0/0/7/0	0/0/4	0/0/3
iv) Super 3		0/0/0/4		
v) Super 2		0/0/0/0		

Locum			1/0/0
D4 Employed			
i) Full Time	5/5/5/2	0/1/4	3/2/3
ii) Part time	0/0/1/2	0/1/0	1/0/0
iii) Job share?	0/1/1/0		
Full time locum			1/0/0
D5 Contract			
i) Temporary	0/0/0/0		1/0/0
i) Permanent	5/6/6/4	0/2/4	4/1/3
ii) Fixed Term	0/0/0/0		
No response	0/0/1/0		
D6 Contracted hours			
17.5	0/1/1/2		
21		0/1/0	
29			1/0/0
31.5	0/0/1/0		
35	4/4/5/1	0/1/4	4/2/3
36	0/1/0/1		
No response	1/0/0/0		
D7. Post school qualifications			
'A'Level English	0/1/0/0		
'A'Level Law	0/1/0/0		
BA (Hons)	0/1/0/0		
BSc Botany	0/0/1/0		
BSc (Hons) Radiography	1/0/0/1	0/2/0	3/1/1
Cert. Competence in Mammography		0/0/1	
Diploma in Business Admin	0/0/1/0		
Diploma in HE		0/0/1	
Diploma in Occupational safety & Health	0/1/0/0		
D.C.R.	4/5/6/2	0/1/2	2/1/2
DMU	0/0/2/0		
DRI	1/0/1/0		0/0/1
G.C.S. Law	0/1/0/0		
H.D.C.R.	0/0/1/0		
ILM Introductory certificate			0/1/0
M Phil	1/0/0/0		
NVQ Team leadership			0/1/0
O.N.D. Engineering	1/0/0/0		
Post Grad. Cert. radiography	0/0/1/0		
Post Grad. Cert Image Interpretation	0/1/0/0		
Post Grad. DMU	0/0/1/0		
Radiation Protection Supervisor		0/0/1	
RANA	0/0/1/0		
No response	1/1/0/1	0/0/2	

D8. Current qualifications being studied for			
Barium enema imaging techniques			0/0/1
Competence in mammography	0/0/0/1	0/1/1	
CT Head Interpretation	0/0/1/0		
MRI Reporting			0/0/1
None	4/6/5/3	0/1/2	5/2/1
No response		0/0/1	
D9 Number of study days etc attended per respondent			
None	0/4/0/2		2/0/0
One	0/0/0/0	0/0/1	0/1
Two	5/1/1/0	0/1/2	1/0/1
Three	1/0/2/0		1/0/1
Four	1/0/0/2	0/1/0/0	0/0/1
Five	0/0/3/0		1/1/0
Six	0/0/0/0		
Seven	1/00/0		
Too many to remember	1/0/0/0		
No response	0/1/1/0	0/0/1	
D10 Number of respondents undertaken/undertaking research	1/1/3/1	0/0/1	0/0/1
Number NOT undertaken/undertaking research	4/5/4/3	0/2/3	5/2/1
D11. Number of years spent in clinical radiography			
1			2
4			1/0/0
5	0/0/0/1		0/2/0
6			0/0/1
8	0/2/0/0	0/1/0/0	1
11	0/0/1/0		
12			1
14	1/0/0/0	0/0/1	
15		0/0/1	
17	0/0/1/0	0/0/1	0/0/1
18	0/0/2/0		
19	0/0/1/0		
20	0/1/0/1		0/0/1
21	0/0/0/1		
23	1/0/0/0		
24	0/1/0/0		
25		0/1/0	
27	1/1/1/0		
28	0/1/0/0		
30 years	1/0/0/0		
36	1/0/0/0		
No response	0/0/0/1	0/0/1	

D11. Number of departments worked in			
1	1/1/1/1		2/1/0
2	2/4/3/1	0/1/1	2/1/2
3	1/0/2/1	0/0/3	1/0/1
4	0/1/1/0		
5	1/0/0/0	0/0/1	
6	0/0/0/0	0/1/0	
No response	0/0/0/1	0/0/1	
D12. Number of posts			
1	0/0/0/0	0/0/0	2/0/0
2	0/3/0/1	0/1/1	2/1/1
3	1/1/3/0		1/1/2
4	0/1/3/2	0/0/1	
5	2/1/1/0		
6	0/0/0/0	0/1/0	
7	1/0/0/0		
9	0/0/0/0	0/0/1	
No response	0/0/0/1	0/0/1	

Questionnaire Responses Managers

A= Manager B= Sup 3/manager C= Super 3/ Manager	A	B	C
A1 –Clinical Work Undertaken			
i) General	1	1/1	1
ii) A&E	1		1
iii) GI Contrast Studies			
iv) DVI			
v) CT		1/	
vi)MRI			1
vii)Mobile			1
viii)Interventional Radiography			
ix) IVU			
x) Mammography			
xi) Cardiac Catheterisation			
xii) Ultrasound			
xiii) RNI			
No clinical Role			1/1
Management & Professional Lead	1		
A.1. b) Proportion of time spent in clinical			
75%+			
60%-74%			
45%-59%			
30%-44%			
15%-29%			
0-14%	1	1/1	1/1
NONE			1
A2 Describes current role:			
Budget Holder	1	0/1	2/1
Human resource manager	1	0/1	2/1
Administrator		1/1	2/1
Clinical radiographer	1?	1/1	1/0
Statistician	1	0/0	2/1
Decision-maker	1	1/1	2/1
Questioner of accepted practice	1	1/1	2/1
Professional	1	1/1	2/1
Team member	1	1/1	2/1
Leader	1	1/1	2/1
Independent Worker		1/1	2/1
Researcher		1/0	2/1
Committee member	1	1/1	2/1
Team Builder	1	1/1	2/1

A3 Number of staff answerable			
Ten radiographers		1/0	
Eleven		0/1	
Fourteen radiographers			1
Thirty radiographers			1
Forty radiographers			0/1
100+	1		
ii) No helper/support worker			
One helper/support worker			
Two helpers/support worker		1/1	
Three helpers/support worker			
Four helpers/support worker			1
Five helpers/support worker			
Six helpers/support worker			1/1
Forty +	1		
iii) No Ancillary		1/1	2
Three Ancillary			0/1
10+	1		
No response			
Two Administrative		1/1	
Four administrative			1
Seventeen Administrative			1
Twenty Administrative			0/1
Forty Five +	1		
v) No Nursing			
One Nursing			
Two Nursing			
Three Nursing			
Four nursing			1/1
10+	1		
No response			
None			
A4. a) Directly accountable to			
i) District I			
ii) District II			
iii) District III			
iv) Business Manager			
v) Radiography Services Manager		1/0	1/0
vi) Clinical Director	1		1/1
vii) Superintendent Radiographer I			
viii) Superintendent Radiographer II			
ix) Superintendent Radiographer III			
x) Other-please specify: Chief Executive			
General Manager	1		
Director of Cancer services		0/1	

A5. Out of Hours duties			
(i) Evenings	1		
(ii) Nights			
(iii) On call from Home	1	1/	1
(iv) Saturday Morning			
(v) Weekends	1		1
Other:			
None		0/1	1/1
A6. Hours worked in total per week			
35		1/0	
36			
37			0/1
38		0/1	
40			1
50+	1		
A7. Role development activities			
(i) Intravenous Injecting *occasionally		1/0	0/1*
(ii) Reporting			
(iii) Red-Dot	1		1
(iv) Barium Enemas.			
(v) Counselling			
(vi) Barium Meals			
vii) Other (please specify)			
MR Protection Supervisor			1
None undertaken		0/1	1
IT Training/system assessment-development			
Consenting patiemts prior to intervention		1	

A8. Additional responsibilities				
Equal opportunities				1
Patient strategy Committee member				1
Broas based clinical skills & general management				1
Child Protection				1
Clinical Governance/Risk member			1/	
Clinical Trials Committee			1/	
Committee Member				
CPD Co-ordinator			1/1	
Data strategy				1
Equipment Selection Committee			1/	
Health & Safety				1
Health & Safety Committee			0/1	
IT Systems Manager			1/	
Lecturer				
MR Protection Supervisor				
Management Committee member			0/1	
PACS Manager			1/	
Radiation protection Committee				
Radiation Protection Supervisor		1	0/1	
Recruitment/Selection			1/	
Student Assessment				
Student placament co-ordinator			1/	
Students		1		
A9. How job differs				
Other supts. Clinical-my role managerial,day to day care of staff				1
Directorate /trust responsibility as opposed to single hospital		1		0/1
Broad based clinical skills/knowledge and general management responsibilitites				
I don't know-diversity?			1/	
No response			0/1	
A10. Respondents Daily activities				
a) Practical Aspects of general patient care	Frequently			2
	Sometimes	1	1/1	
	Never			0/1
b) Observation activities e.g. taking blood pressure, temperature etc.	Frequently			
	Sometimes			
	Never	1	1/1	2/1
c) Non radiographic duties assisting radiologist	Frequently			
	Sometimes	1	1/1	
	Never			2/1
d) Assisting in sterile procedures	Frequently			

	Sometimes	1	1/	1
	Never		0/1	1/1
f) Cleaning of equipment	Frequently			
	Sometimes	1	1/	1
	Never			1/1
g) Preparation of equipment and accessories for examination	Frequently			
	Sometimes	1	1/	1
	Never		0/1	1/1
h) Counselling	Frequently			1
	Sometimes		0/1	0/1
	Never	1	1/	1
i) Image manipulation	Frequently	1	1/	
	Sometimes			1/1
	Never		0/1	1
	No response			
j) Administrative tasks	Frequently	1	1/1	1/1
	Sometimes		0/1	1
	Never			
k) Make an independent decision for supplementary techniques to be undertaken	Frequently	1	1/	
	Sometimes		0/1	1
	Never			1/1
o) Decide independently to undertake a different examination than the one requested.	Frequently	1	1/1	
	Sometimes			1
	Never			1/1
p) Management	Frequently	1	1/1	2
	Sometimes			1
	Never			
q) Other (please specify)	Frequently		1/	
	Sometimes			
	Never			
A11 Attributes needed in job				
Patience				1
Broad knowledge/Wide Knowledge base			1/	1
Budgeting skills				0/1
Common sense			0/1	
Decision making skills				0/1
Flexibility			1/	1
Good people skills			0/1	
HR Skills				1
Knowledge of radiology process				0/1
Logical Thinker				1
Organisation/planning ability			0/1	

Patient OrientatedAttitude	1		
Resilience	1		
Sense of Humour	1		1
Strategic Thinker		1/	

A12i). Aspect of role should be performed by someone else			
Clinical Management of CT/MRI Scanners			1
Minor Admin	1		0/1
None-happy with my role/all relevant to a point		1/0	1/0
I delegate suitable aspects of my role to appropriate staff although I maintain ultimate responsibility		0/1	
A12ii.Activities respondent thinks they should do			
IT Support / PACS			1
None/Quite happy with my role and tasks performed		0/1	1
Financial management		1/	
Greater Control on Strategic Direction of Services	1		
None			0/1
A13 Activities undertaken initial training did not train respondent for			
Accounting/Audit			0/1
Administrative activities		0/1	
Business Planning			0/1
Finance			
HR Issues	1		1
IT activities	1	1/	
Management	1	1/1	1/1
PACS/IT			1
Statistics	1		
A14. Activities trained for but which are not undertaken			
Clinical radiogrqaphy		0/1	1/1
No response			
ObservationBP/Temp		1/	
Equipment Details	1		
None			1
A15. Respondent descriptors			
a) Professional	1	1/1	2/1
b) Team member	1	1/1	2/1
c) Independent (autonomous) worker	1	1/1	2/1
d) Questioning of accepted practice		1/1	2/1
e) Researcher		1/	0/0
f) Technician		1/	0/0
Counsellor			1/0
Manager/Supervisor mentor		1/	

A16 On qualification respondent...				
i) was competent in general radiography	Strongly agree		0/1	1
	Agree	1	1/	1/1
	Disagree			
	Strongly disagree			
	No response			
ii) had no experience of specialised procedures	Strongly agree			
	Agree			
	Disagree	1	1/1	2/1
	Strongly disagree			
	No response			
iii) had only limited experience of specialised procedures	Strongly agree			1
	Agree	1	0/1	0/1
	Disagree		1/	1
	Strongly disagree			
	No response			
iv) was competent in one specialised procedure *Mammography **CT	Strongly agree		1/	
	Agree			1*
	Disagree		0/1	
	Strongly disagree	1		1
	No response			0/1
v) was competent in several specialised procedures *CT & Nuclear Med & Neuro/Angio	Strongly agree			
	Agree			0/1
	Disagree		1/	1
	Strongly disagree	1	0/1	1
	No response			
vi) was competent in all specialised procedures	Strongly agree			
	Agree			
	Disagree		1/	1
	Strongly disagree	1	0/1	1
	No response			
B1. Individual who decides on departmental policies				
i) Clinical Director		1		1
ii) Radiography Service Manger				
iii) Radiology Directorate				1/1
iv) I do				
v) Consultant radiologist/radiography manager			1/1	
vi) Consultants/Superintendents		1		

B2. Individual who organises day to day running of the department				
i) I do			0/1	1
ii) Superintendent I				
iii) Superintendent II		1		
iv) Superintendent III		1	1/1**	1/1
v) Senior 1 / Superintendent IV			0/1**	
vi) Radiography Services Manager		1		
vii) Other			1/	
*1Respondent stated both				
** The three of us work together				
B3.a) Radiography helpers should perform these aspects of clinical radiographers role	None			
	Escort Duties			1
	Film Coding			
	Film processing			
	General care e.g. escort to toilet	1		
	I.V. Injections			
	Paperwork	1		
	Patient preparation/changing			0/1
	Receptioning in clinical areas			1
	Record resources in RNI			
	Support to patients undergoing procedures			1
	Stock control and general tidying			1
	No response			
*** None in this department due to specialised nature**			1/	
b) radiography technicians/practitioners should perform	None			2
	Assist radiologist with screening work in screening rooms	1		
	Basic appendicular radiography		1*/	0/1
*Basic extremity exams under supervision and with adequate training having reached a pre-determined level of competency	Basic radiography	1		
	I.V injections	1		

c) Someone else	None	1	1/1	2/1
B4 Clinical radiographers should perform these....				
	None			
	Barium enemas	1		
	Barium meals	1		
	All Barium studies			1
	Cas reporting			1
	Hickman lines		1/	
	Interventional radiography		1/	
	Issuing provisional reports			
	I.V. injecting			
	IVU's (supervising)	1		0/1
	Mammography	1		
	Radiopharmacy			
	Red Dot reporting			
	Reporting axial skeleton			1
	Reporting CT	1		
	Reporting GI			1
	Reporting Ultrasound			1
	Reporting	1	1/	0/1
	Some interventional exams = Hickman insertion		1/	

a) Role development of radiographers should be actively encouraged?	Strongly agree	1	1/1	1/1
	Agree			
	Disagree			
	Strongly disagree			1
	No response			
b) Most radiographers want to develop their roles?	Strongly agree			
	Agree	1	1/1	0/1
	Disagree			2
	Strongly disagree			
	No response			
c) Other professionals are obstructing the role development of radiographers?	Strongly agree	1	1/	
	Agree		0/1	
	Disagree			2/1
	Strongly disagree			
	No response			
d) If radiographers continue to develop their roles part of	Strongly agree			
	Agree	1	1/	0/1

their existing role will have to be undertaken by another suitably trained category of staff?	Disagree		0/1	1
	Strongly disagree			1
	No response			
a) How well did your radiography education (training) prepare you for your role when you first qualified?	Very well		0/1	1
	Well	1	1/	0/1
	Poorly			
	Very poorly			
b) How well did your radiography education (training) prepare you for your role at later stages in your career?	Very well			
	Well			1/1
	Poorly	1	1/1	
	Very poorly			1
	No response			
c) How do you think radiographers qualifying now perform in the workplace?	Very well			
	Well	1	1/	2/1
	Poorly			
	Very poorly			
	Unable to comment		0/1	
d) How well does present day radiography education (training) prepare those qualifying for their role when they first qualify?	Very well			
	Well	1	1/	1/1
	Poorly			
	Very poorly			
	Unable to comment		0/1	
Unable to comment				

e) How well does present day radiography education (training) prepare radiographers for their role at later stages in their career?	Very well			
	Well	1		1/1
	Poorly		0/1	
	Very poorly			
Unable to comment				
C2 Radiographers qualifying now should be				
i) Competent in general radiography	Strongly agree	1	1/1	2/1
	Agree			
	Disagree			
	Strongly disagree			
	No response			
ii) Have no experience of specialised procedures	Strongly agree			
	Agree			
	Disagree	1	1/	1/1
	Strongly disagree		0/1	1

	No response			
iii) Have limited experience of specialised procedures	Strongly agree			1
	Agree	1	1/1	1
	Disagree			0/1
	Strongly disagree			
	No response			
iv) Competent in one specialised procedure	Strongly agree			
	Agree	1		0
	Disagree		1/1	2/1
	Strongly disagree			
	No response			
v) Competent in several specialised procedures	Strongly agree			
	Agree			0/1
	Disagree	1	1/1	1
	Strongly disagree			1
	No response			
vi) Competent in all specialised procedures	Strongly agree			
	Agree			
	Disagree		1/	1/1
	Strongly disagree	1	0/1	
	No response			
C3 Not included sufficiently in undergraduate education				
Nothing				
Ability to relate to patients			0/1	
Anatomy			1/	
Annual leave				
Basic radiography				
Being able to adapt/modify technique				
Being part of the team				
Cannulation/IV skills				0/1
Care of the patient				
Care of the patient (ward training)				
Cognition of pathology on films				
Communication skills			1/1	
Counselling				
C.T.(more)				
Health management module				
I.V. injecting				
I don't know the curriculum/unable to comment				1
Knowledge of other AHP roles+++				1
Nursing procedures				
Old log books				
Out of hours work				

Patient care				
Practical understanding of anatomy				
Practical training-more time should be spent in the department			0/1	
Radiographic Technique				
Pathology			1/	
Sterile procedures				
The 9-5 working week				
Theatre work				
Current System Desopite Limited Time Does Well		1		
C4 Should be excluded or reduced in undergraduate education				
Nil/Nothing				
Anatomy & technique should reflect the time many radiographers spend in special techniques				
CT Head				
Don't know the curriculum			1/	
Is this possible		1		
Equipment module				
Less theory of all aspects				
Some of the theory				
Management theory				
Nothing/nil				
No response				
Physics (basic understanding would do)				
Psychology				
Unable to comment			0/1	1
C5. Are radiographers able to undertake sufficient post graduate education	YES	1	1/1	2/1
	NO			
	No Response			
D3 Grade				
i) Super 3			1/	2
ii) Senior 2				
iii) Senior 1				
iv) Super 3				
v) Super 2				
Manager		1	0/1	0/1
D4 Employed				
i) Full Time		1	1/1	2/1
ii) Part time				
iii) Job share?				
Full time locum				

D5 Contract			
i) Temporary			1
i) Permanent	1	1/1	1/1
ii) Fixed Term			
No response			
D6 Contracted hours			
17.5			
21			
29			
31.5			
35	1		2
36			
37		0/1	0/1
No response			
D7. Post school qualifications			
'A'Level English			
'A'Level Law			
BA (Hons)			
BSc Botany			
BSc (Hons) Radiography			
Cert. Competence in Mammography			
Certificate in Management Studies			1
Cert Ed	1		
COSHH Safety			0/1
Diploma in Business Admin			
Diploma in Economic Evaluation			0/1
Diploma in HE			
Diploma in Management Studies	1	1/	1
Diploma in Occupational safety & Health			
D.C.R.	1	1/	2/1
DMU			
DRI			0/1
G.C.S. Law			
H.D.C.R.	1	1/	
ILM Introductory certificate			
Institute of Supervisory Management diploma			0/1
M Phil			
MSc healthcare management	1		0/1
NVQ Team leadership			
O.N.D. Engineering			
Post Grad. Cert. radiography			
Post Grad. Cert Image Interpretation			
Post Grad. DMU			
Radiation Protection Supervisor			

RANA			
No response		0/1	
TDCR	1		

D8. Current qualifications being studied for			
Barium enema imaging techniques			
Competence in mammography			
CT Head Interpretation			
I.T.-H.N.C.			1
None	1	1/1	1/1
No response			
D9 Number of study days etc attended per respondent			
None			
One			
Two	1	0/1	
Three			0/1
Four			
Five			
Six			1
Seven			1
Eight		1/0	
Too many to remember			
No response			
D10 Number of respondents undertaken/undertaking research	1	1/0	
Number NOT undertaken/undertaking research		0/1	2/1
D11. Number of years spent in radiography			
18			0/1
19			
20			
21			
23			
24		1/	
25			
28	1	0/1	
30 years			
36			1
37		0/1	
No response			
Number of years spent in this managerial role			
3		1/0	0/1
5		0/1	1/0
15	0/1		
22			1

D11. Number of departments worked in			
1			
2		1/	1
3		0/1	1/1
4			
5			
6			
No response			
D12. Number of posts			
1			
2			1
3			0/1
4		0/1	
5			1
6			
7			
9			
No response			

Appendix Seven

Outline Sample Interview Schedule

Outline Sample Interview Questions
Manager Department B

How do you feel your role here compares to those managers of the same grade in another department?

One of the things I've noticed is that the lowest radiogrphers grade employed is a Senior 2. Why is that?

What qualities are you looking for in the staff here?

What is the turnover of staff?

On your questionnaire you said you feel graduates lack communication skills, can you explain what you mean?

What has this department to offer students?

What do you think about the qualities of the students we take on the course?

How do you feel this have changed over the years, if at all?

How do you think radiographers' roles have changed over the last ten years or so?

What do you see radiographers of the future doing?

How should the radiography curriculum be developed to reflect this?

In terms of role development what do you think is going to happen?

How do you think this will influence undergraduate education?

What are your views on training radiographers to work in specialist areas as an initial qualification?

What are your views on the availability of post graduate education? What about radiographers' uptake?

You have management qualifications. How useful have these been? What about the inclusion of management in the undergraduate curriculum?

How important is it that radiographers are research active?
(How much is going on in radiography)

How do the graduates produced by XXXXX compare with those from other Departments of Radiography Education?

I know you said on the questionnaire you weren't really aware of what is currently in the undergraduate course, but what do you feel are important areas which should be included? Do you feel there is a need for you to know about the undergraduate programme? If so, how this could be achieved?

