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Sonography Culture:
Attitudes and opinions towards the introduction of the graduate sonographer

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Abstract

Aim(s)

The project aimed to explore the culture of sonography through the interpretation of the attitudes, opinions and perceptions of a sample of practicing sonographers concerning the possible introduction of the graduate sonographer role. The participants' insights to their working world provided new understandings of the research question

> **"What are the individual attitudes and opinions of sonographers towards the role of the graduate sonographer?"**

Method

A qualitative study was undertaken in two phases using a constructivist methodology within a critical theory framework. Phase one aimed to explore participant attitudes and opinions toward the implementation of the graduate sonographer role. Phase two aimed to explore how the working world may have influenced the participants' opinions and attitudes. Data was gathered from ten purposively selected participants using semi-structured interviews.

Findings

Thematic analysis identified main themes for each phase: protectionism, power and career frameworks were found to be replicated in both phases.
The shortage of sonographers and the increasing demand for ultrasound services created an imbalance that had put sonographers in a very powerful position; able to directly influence sonographer working practice, education and remuneration. The interpretations of the data suggested that the initial power base of sonographers was perceived to have been achieved through a culture of occupational imperialism (delegation down). However, as the occupational group became established and a workforce crisis deepened, a culture of usurpation and protectionism evolved within sonography.

Conclusions

A differentiation between graduate sonographer clinical skills, assessed by competence, and advanced practice sonographer complex clinical skills, defined by capability has the potential to create a more inclusive, yet clearly delineated, career structure. This would acknowledge and value the advancing skills at each grade. This was argued to have the potential to reinvigorate the culture of occupational imperialism within sonography

Acknowledgements

Reflecting on my professional life that has led me to this point I have many people to thank for encouraging and giving me the opportunities to study at Doctoral level. Employers, colleagues and friends have all shaped my professional and personal life; I have learnt many invaluable lessons along the way.

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Author's Statement

I declare that the work in this thesis was carried out in accordance with the regulations of Sheffield Hallam University and is original except where indicated by specific reference in the text. No part of this thesis has been submitted as part of any other academic award. The thesis has not been presented to any other institution.

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Glossary of terms

Agenda for Change Framework (AfC) – National Health Service (NHS) grading and pay system for staff, excluding doctors, dentists and some managers.

British Medical Ultrasound Society (BMUS) – a multi-disciplinary body who maintain standards of sonography practice, advance education and provide advice and information with regards to ultrasound.

Critical theory – social theory that focuses on critiquing and changing society as a whole

Consortium for the Accreditation of Sonographic Education (CASE) - an organisation that accredits sonographic courses delivered within the UK.

Health and Care Professions Council (HCPC) – an independent UK regulatory body responsible for setting and maintain minimum standards of practice for health professionals.

Health Education England (HEE) – a Non-Departmental Public Body that supports the delivery of excellent healthcare by ensuring that the workforce has the correct numbers, skills and values and behaviours, in the right place at the right time to meet the needs of the public.

Migratory Advisory committee (MAC)– an independent, non-statutory, non-departmental public body that advises the government on professional migration issues.

United Kingdom Association of Sonographers (UKAS) –provides guidance for professional working standards

<u>Chapter One</u>

<u>Contextual Background of the Research</u>

1.1 Rationale for this study

DePoy and Gitlin (2016) advocated that a research topic should have a personal interest and meaning for the researcher so that the interest was maintained throughout the long and arduous research journey. Choosing a research topic that had personal significance was argued to create a platform for scholarly examination which was made richer by the personal understanding of the issues presented. The author's role as both an academic, delivering postgraduate ultrasound education, and a practicing sonographer provided the link between personal interest and practical use of the research topic. The author, in an academic role, was asked to develop a BSc Diagnostic Ultrasound programme but found this problematic; there were no agreed clinical competences identified for a graduate sonographer from which to frame and map the programme learning outcomes. Whilst Skills for Health (2014) had developed a template for band 5 sonographers, at the point of writing, this career framework with expected competences (after three years) was still out for consultation. The lack of agreed, and nationally adopted, clinical competences that defined a role for graduate sonographers indicated an area for further exploration.

Furthermore, at the time that this research topic was developed, the author was involved in a Health Education England (HEE) working party to explore the ultrasound workforce in the East Midlands area (HEEM); exploring possible solutions to the deepening sonographer workforce shortage (HEEM,2014). Being part of this working party increased the author's awareness of the challenges that the ultrasound workforce was facing. Possible solutions were explored through mapping and educational frameworks. The author's experience of the situation was a feeling of great animosity and resistance towards implementing change amongst some of the members of the forum, as

well as becoming aware of conflicting agendas between the stakeholders that appeared to be connected to fiscal and resource competition, as well as the maintenance of reputation and hierarchical standing.

1.2 Background

Developing a critical narrative of the historical journey of sonography as an occupation including its professional origins, training and education and realignment with the Agenda for Change Framework (2004) provided a more in-depth understanding as to why sonography was a workforce in crisis. The critical review of the sonography workforce and service demands provided a contextual background that illustrated why sonography had become a Department of Health (DoH) priority as indicated in the Health Education England 2016 -17 mandate (DoH, 2016).

Sonography, as a workforce, had been in a state of crisis for several years (Parker & Harrison, 2015). Insufficient training, an aging workforce and lack of foresight and leadership had been documented over the last 20 years as reasons for the workforce challenges in ultrasound (Parker & Harrison, 2015, SCoR, 2009). Clinical departments had failed to effectively succession plan for an ageing workforce with inadequate numbers of students being trained (Parker & Harrison, 2013). Leadership from professional bodies, on how to address the workforce crisis, could be argued to have been lacking. This was evident in the two SCoR (2013) reports which acknowledged the shortage of qualified sonographers but failed to offer any concrete solutions as to how the ultrasound stakeholders could address it.

Overseas sonographer recruitment, direct-entry Masters (MSc) sonography programmes and the implementation of assistant sonographer practitioners all made little impact on the situation (SCoR, 2009). As the crisis deepened the concept of a new, lower grade, graduate sonographer, educated at direct entry BSc (Hons) level and employed at band 5 began to emerge as a possible solution (Thompson, 2009). However, there was very little appetite, from sonographers, to develop this level with an apparent reluctance to define and

agree the potential role and identify its respective competencies in order for a programme to be designed (Parker & Harrison, 2015; Thompson, 2009; Waring *et al.*, 2015). There was no evidence within the literature of an exploration into where this resistance to the role amongst the sonographer population was rooted.

1.2.1 Historical background of sonography

Whilst the use of ultrasound for medical diagnosis was reported as far back as the Second World War it wasn't until the mid-sixties that ultrasound became more commercially available (Lee & Paterson, 2004). Prior to the mid 70's ultrasound was firmly in the medical domain of practice.   Medical ultrasound practice (for diagnostic purposes) was historically born from a multidisciplinary collaboration driven by the advancements in technology and growing clinical need (Gibbs, 2013). Sonography practice was initially utilized in obstetric care with a range of medical and non-medical professionals using its diagnostic capabilities. Professionals such as physicists, obstetricians, midwives and radiographers were all involved in using medical ultrasound as a safe diagnostic tool within antenatal care (Lee & Paterson, 2004).

However, by the early 1980's the biggest proportion of professionals undertaking ultrasound were radiographers under the delegation of radiologists (Lee & Paterson, 2004; Ferris, 2005). Initially the radiographer's practice was of a limited scope with radiologists preventing the radiographers from communicating scan reports using the Statement of Conduct issued by the Radiographers Regulatory Board for Professions Supplementary to Medicine (now called the Health and Care Professions Council (HCPC)) as justification for this stance (Price, 2010). Reeves (2002) argued that this resistance from the radiologist to relinquish some of their roles to the sonographers was mainly due to the need to maintain a position of power within the radiology community.

During the 1980's, with increasing equipment technological advances from static to real time greyscale scanning, came an increase in demand for routine obstetric scans (Gibbs, 2013; Meire & Farrant, 1982). The radiologists were unable to meet the demand; this saw the unofficial lifting of the barrier to

reporting for obstetric examinations (Gibbs, 2013). Witcombe and Radford (1986) reported that a survey of obstetric departments had indicated many health authorities had sanctioned their radiographers to work beyond their professional constraints allowing them to provide comments on obstetric scan results. This practice of radiographers providing written comments in obstetric ultrasound examinations paved the way for sonographer (and ultimately all radiographer) reporting (Price 2010). The unofficial lifting of professional boundaries was at odds with the regulatory body of that time (Council for Professions Supplementary to Medicine) and its Professional Statement of Conduct (Gibbs, 2013; Price, 2010); this led to the Society of Radiographers mounting pressure on the regulatory body to remove the constraints on radiographer reporting within the Professional Statement of Conduct and in 1987 it was eventually removed (Gibbs, 2013; Hart & Dixon, 2008; Price, 2010).

Sonographer reporting in general medical ultrasound practice was much slower to progress moving from proforma reporting in the late 1990's, that was checked by the radiologist, to eventually providing full autonomous reports direct to the referring clinician (Hart & Dixon, 2008). Sonographers, who now could provide reports, were considered the pioneers for role extension (Gibbs, 2013). This dispensation to allow sonographers the opportunity to extend their scope of practice into reporting was argued to be the catalyst to attributing specialty status to sonography (Ferris, 2005). Furthermore, Ferris (2005) suggested that this specialty status created an elite and exclusive practice amongst radiographers and sonographers thereby transferring, in part, some of the "power" status from radiologists to sonographers.

However, even though ultrasound scans accounted for over 22% of all diagnostic imaging examinations and the role of the sonographer was expanding, at the time of writing, there remained no statutory regulation of sonography practice in the UK with professionals relying on regulation through their primary professional regulatory bodies (Gibbs, 2013). Lee and Paterson (2004) argued that the issues around regulation of a practice, that included professionals from a wide and varied professional background, were complex with no easy solution

1.2.2 The Development of Ultrasound training and education

In 1977, the Society of Radiographers implemented a training programme for radiographers wishing to pursue advancement into ultrasound imaging called the Diploma in Medical Ultrasound (DMU). For other professionals undertaking ultrasound, a Certificate in Medical Ultrasound was provided (Lee & Paterson, 2004). However, this led to some ultrasound practitioners holding a formal qualification and some not. As this was not a registered profession and had no statutory regulation there was no legal requirement to undertake formal training (Parker & Wolstenhulme, 2012). It was at this time that radiographers undertaking ultrasound examinations became generally known as sonographers in recognition of their specialist imaging skills (Lee & Paterson, 2004). In the early 1990's (in response to the change of radiographer education moving from a diploma to a BSc (Hons) degree) the DMU was replaced by a credit-bearing postgraduate qualification that was open to all professionals (Parker & Wolstenhulme, 2012; Price, 2010). Radiographers and midwives made up most of the sonographer workforce but, unlike the radiographers (who preferred to be called sonographers), the midwives held onto to their professional identity referring to themselves as midwife sonographers (Lee & Paterson, 2004).

In recognition of the differing levels of training nationally an organization was formed in 1993 to oversee the quality of the ultrasound programmes. This organization became known as the Consortium for the Accreditation of Sonographic Education (CASE) (Parker & Wolstenhulme, 2012). The consortium was formed by several professional bodies representing those that were undertaking ultrasound examinations at that time, such as radiographers, medical physicists and technologists and midwives. CASE's aim was to provide a national overview of the level of training and education expected for safe practice within ultrasound (Potter, Cairns & Stokes, 2012). At the time of writing there were six professional organizations within the consortium: Society of Vascular Technology of Great Britain and Ireland (SVT), Institute of Physics and Engineering in Medicine (IPEM), The Society and College of Radiographers (SCoR), The College of Podiatry, Chartered Society of Physiotherapists and British Medical Ultrasound Society (BMUS), ensuring sonographers,

irrespective of professional background, were trained to a high standard thus promoting best ultrasound practice (CASE, 2016; Potter *et al.*, 2012). CASE's constitution had been to accredit Master's and Postgraduate level programmes only with some exceptions being made to short course programmes, but these were also at level 7 (CASE, 2016). At the time of writing, due to the increasing pressure from HEE for the development of undergraduate sonographer training, CASE revised its constitution on accreditation and included approval of level 6 (undergraduate) sonographer education programmes.

Even though the education and training of sonographers had become more formal and had quality mechanisms to ensure sonographers were appropriately trained, the role extension to report general medical scans was restricted by radiologists, as stated earlier, until the late 1990's (Gibbs, 2013). Even though sonographer reporting became more accepted as a delegated activity the radiologists clung on to the ownership/power over the report, only allowing sonographers to report general medical ultrasound examinations with the proviso that a radiologist oversaw the list and was available for consultation on anything abnormal (Hart & Dixon, 2008). Anecdotally, the practice of radiologists overseeing general ultrasound scanning continues within some departments suggesting that there remained some reluctance to fully relinquish ultrasound practice to other professionals outside of medicine.

The turn of the 21st century saw ultrasound practice become a widely-used imaging modality that was, overall, a sonographer-led service with only a few radiologists still actively undertaking regular scanning lists (Hart & Dixon, 2018). Sonographer role extension, mainly due to the longstanding shortfall in the radiologist workforce (Woodford, 2006) and increasing demand for routine ultrasound services, facilitated the extension of the sonographer role into autonomous practice including the reporting of both obstetric and general medical ultrasound examinations (Hart & Dixon, 2008; Lee & Paterson, 2004).

1.2.3 Sonography career framework development

In 2000, the government recognized the need to drastically modernize the National Health Service (NHS) resulting in the publication of The NHS Plan,

(NHS, 2000). The key focus of this plan was to provide a patient-centered service through the extension of professional boundaries and the full use of a range of clinical skills (Woodford, 2005). Radiology had a longstanding workforce crisis with insufficient radiologist and radiographer numbers to deliver an effective service and this was seen by the Society and College of Radiographers as a great opportunity to explore a new framework (opcit). Insufficient radiologist numbers provided the catalyst for the "upskilling" of radiographers enabling them to undertake advanced clinical roles that were once undertaken by radiologists; whilst at the same time the introduction of the assistant radiographic practitioner underpinned the registered radiographer workforce thereby enabling the release of radiographers to advance their practice.

The four-tier model described a career framework with practice through the different levels from the most senior, consultant practitioner, advanced practitioner, practitioner to the basic assistant practitioner (Figure 1). Subsequently these roles were then matched to the Agenda for Change framework for pay banding in 2004, which introduced an additional level of specialist practitioner (Parker & Wolstenhulme, 2012). The implementation of the Agenda for Change in 2004 mapped the national job specification for sonographers at band 7, advanced practitioner, arguing the technical skill and interpretation of ultrasound examinations required higher levels of knowledge and skills of that required of a band 6, specialist practitioner (opcit).   Whilst most departments adopted this guidance, there was some anecdotal evidence that indicated the Agenda for Change framework was not adopted nationwide, with some NHS providers implementing separate pay and career frameworks.

The NHS Knowledge and Skills Framework appraisal tool and the National Occupational Standards threshold competencies in sonography had been reviewed extensively over the years to redefine the role description and pay banding (Hart & Dixon, 2008; Smith & Duffy, 2009; Woodford, 2005). The latest review by Skills for Health (2014) applied generic practitioner band 5 characteristics (that were developed along with employers and stakeholders) to the role of sonographer (band 5). The Skills for Health band 5 sonographer

framework comprised core and common specific National Occupational Standards/competences but contained very little detail of exact clinical competences required of the role; three years on (at the time of writing) the band 5 sonographer framework was still out for consultation. Most of the radiographer sonographer workforce were allocated to an AFC band 7 or 8a with no other levels of practitioner underpinning these bands.   Parker and Wolstenhulme (2012) suggested that there were some NHS Trusts who employed midwife sonographers at band 6 due to their limited scope of practice. It appeared that there were no enforced pay and career frameworks in place with regards to sonographic practice which led to discrepancies in application and interpretation between service providers (opcit).

1.2.3.a Assistant Sonographer Practitioners

In 2008, the Society of Radiographers published a report that provided a framework for the role of band 4 assistant practitioners in Ultrasound. This grading was argued to be appropriate as the assistant practitioners performed very focused examinations within strict protocols with no requirement for image interpretation or diagnosis (SCoR, 2012). The band 4 assistant practitioner (ultrasound) role was further clarified by Coleman (2013) suggesting the role would be narrowly focused and in a prescribed area of practice, such as screening, under the supervision of a registered sonographer.

The assistant practitioner role in ultrasound was developed primarily to support the Abdominal Aortic Aneurysm screening service that functioned outside of the general ultrasound service provided to primary and secondary care; therefore, it can be argued to have had little impact on providing a solution to the sonographer workforce deficit. Furthermore, the Centre for Workforce Intelligence (CfWI) (2017) stated that this level of practitioner fell outside of the definition of a sonographer suggesting a possible reason as to why the assistant ultrasound practitioner (band 4) had not been implemented within ultrasound services.
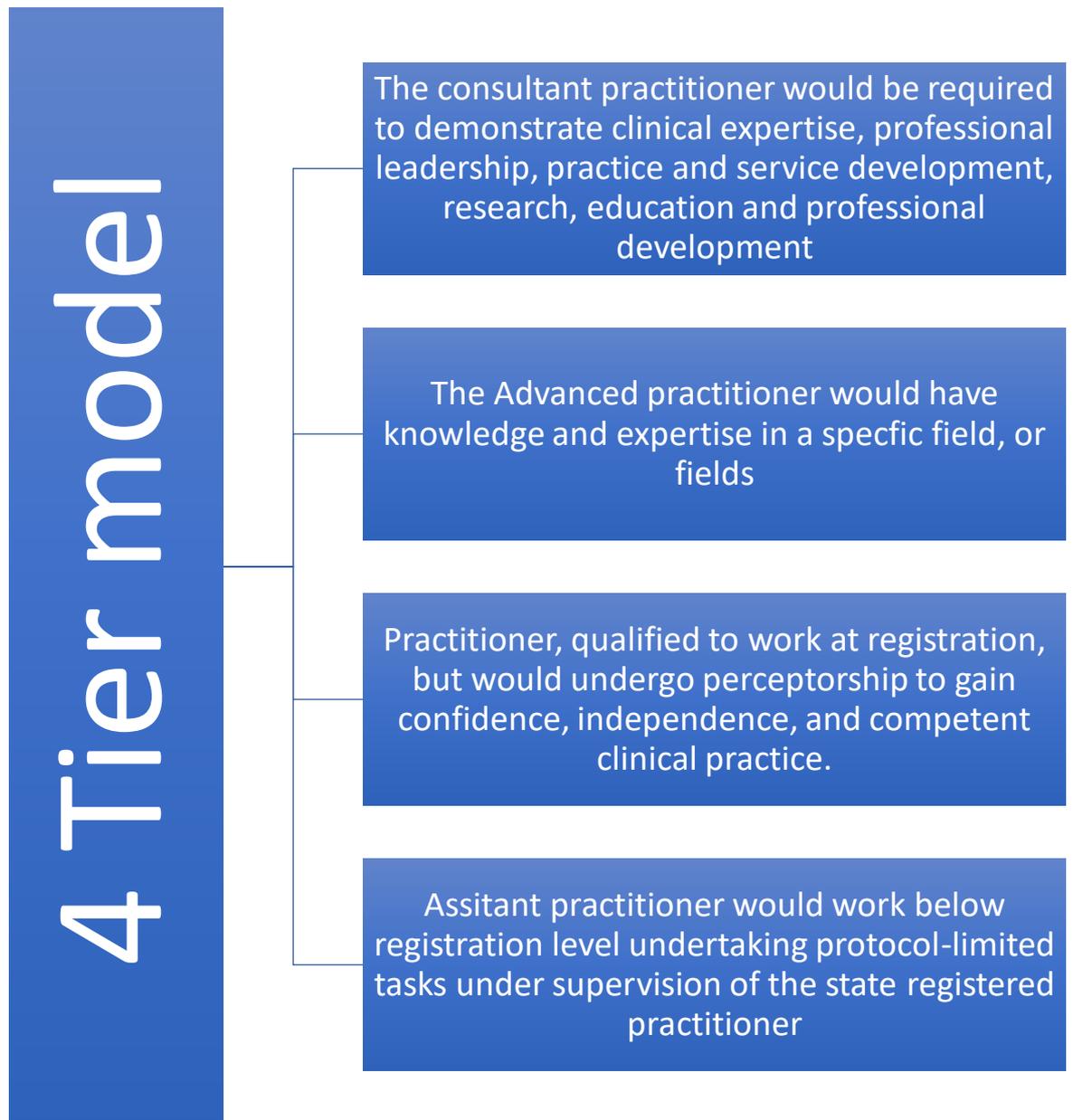
Figure 1: Four Tier Model (DOH 2003)

1.3 Workforce initiatives

The Society and College of Radiographer's report (2009) suggested that there were several routes that could be explored to grow a stable workforce in ultrasound. The suggestions included overseas recruitment, "focused" ultrasound courses (ultrasound programmes that are focused to one aspect of ultrasound practice such as first trimester ultrasound), assistant practitioners and direct entry ultrasound courses (post-graduate and undergraduate). Some of these suggestions of workforce development, such as overseas recruitment and assistant practitioners in ultrasound, had already been implemented with very little impact on improving the sonographer workforce deficit (Thompson 2009).

Since 2003 there had been much debate about (and historical reluctance regarding) the concept of an undergraduate ultrasound training programme that would result in the creation of a practitioner sonographer at band 5 or 6. Thompson (2009), on behalf of the Society and College of Radiographers (SCoR), explored the possibility of an undergraduate sonography programme and identified some of the advantages and potential issues, such as concerns regarding a potential lack of emotional intelligence at undergraduate entry, and a lack of regulation.

Emotional Intelligence (EI), as a psychological construct, had courted considerable debate over the years with its definition differing depending on what theoretical framework was employed (MacCann, Joseph, Newman & Roberts, 2014). Whilst there appeared to be little consensus as to whether EI was an individual ability, non-cognitive skill, capability or competence it was generally agreed that EI was an emotional awareness of self and others, performance efficiency and emotional management (Littlejohn, 2012). Emotional intelligence was identified as being a crucial skill when working in areas that were highly emotive such as complex contexts of health care, trauma and oncology services, all of which sonographers were required to practice in (MacKay *et al.*, 2015).

Concerns about the lack of emotional intelligence being a barrier for implementing undergraduate sonographer education continued and were supported by the thinking that the level of EI skills directly influenced the ability to effectively perform ethical, problem solving, and critical thinking skills required of an autonomous practitioner (Akerjordet & Severinsson, 2007; Mackay *et al.,* 2015). Suggestions that EI developed as the professional matured (with age) (Littlejohn, 2012) also provided weight to the argument that student sonographers on a graduate programme (due to the student age demographics that this programme would attract) would not have the skills required for the stressful and emotive practice of sonography.

However, Mackay *et al.,* (2015) found, in a longitudinal study that compared student emotional intelligence trait scores to qualified radiographers, that EI could be developed through effective educational curricula alongside embedded clinical practice at an undergraduate level. Thompson (2009) argued that the barrier of EI for the provision of undergraduate sonography training had no real substance as other professions, such as midwifery, had managed to overcome this within their undergraduate programmes. Midwifery and nursing programmes had notably moved away from functionalistic learning to transformatory learning processes that facilitated the students to develop EI skills through reflection, supportive supervision and mentorship, enhanced by service user involvement in delivery and planning of the course content (Freshwater & Stickley, 2004). All of this placed EI at the core of the midwifery training thus supporting MacKay *et al.,'s* (2015) suggestion that EI skills could be taught in an undergraduate programme.

Midwifery training in the early 1990s, after decades of being restricted to predominantly post-nursing training (similar to sonography, that was restricted to practitioners who had a primary profession, usually radiography), was changed to direct entry undergraduate education (Radford & Thompson, 1993). Challenges to the introduction of undergraduate midwifery education experienced in Australia, USA and England suggested similarities to that being experienced with sonography direct entry education; the departure from traditional education practices being cited as being concerned with cost

savings, workforce shortage driven, lacking common sense and at risk of creating a two tier midwifery profession whereby the direct entry graduate midwives would be less flexible and clinical skills would not be comparable to those of the postgraduate trained midwives (Radford & Thompson, 1993; Shah & Hsia, 1996). This scepticism was overcome with sensitive consideration of the professional concerns and a collaborative approach to developing a programme that assured midwifery point of entry clinical competency.

Statutory regulation, through professional registration, was also argued to be a formidable barrier to the development of a sonography undergraduate programme as this was argued to create significant doubt over the employability of a graduate sonographer (Parker & Harrison, 2015). "Sonographer", at the time of writing, was not a recognized professional title with no legal requirement to be registered to practice; registration had historically been achieved through the primary profession with either the Nursing and Midwifery Council (NMC) or the Health Care Professions Council (HCPC) as a nurse, midwife or radiographer. The issues concerning registration had been the most frequently cited reasons why ultrasound education should be maintained at postgraduate/post-registration level. Thompson (2009) suggested that whilst regulation was desirable it was not essential; although anecdotally it has been suggested that most NHS providers would not consider an application without evidence of registration to a regulatory body.

However, this barrier was set to change with Health Education England actively encouraging Higher Education Institutes (HEIs) to develop undergraduate BSc (Hons) sonography programmes; the SCoR emphasized that the lack of registration should not be a barrier to undergraduate sonographers being employed (SoR, 2013). Furthermore, the Government 2016-17 mandate (DoH, 2016) to HEE actively supported the exploration of alternative education routes that would boost the numbers of appropriately trained sonographers to maintain a stable workforce; encouraging the introduction of higher apprenticeships in health with national standards being developed. These actions appeared to be advocating the employment of sonographers that were not (at that time)

statutory registered health professionals. Political pressure from the Department of Health (2016) to increase sonographer numbers within the 2016-17 HEE mandate to meet service demands was providing impetus for a shift in health education practice.

In 2007, the Society and College of Radiographers set up the public voluntary register of sonographers to support the application to the HCPC for sonography to be a recognized registered profession. This application was not successful; Gibbs (2013), citing the DoH (2011) command paper, suggested that the government, at the time of the application, was looking to reduce the cost of professional regulation and devolve decision making down to a local level encouraging the establishment of the voluntary registers rather than statutory regulation. The voluntary register for sonographers, which was originally set up jointly between the SCoR and the United Kingdom Association of Sonographers (UKAS) in 2007, continued to be managed and updated by the SCoR. The purpose of the voluntary register was to enhance public confidence and protect the public in an area of practice where statutory regulation, at the time of writing, did not exist.

Over time, with the main barriers of emotional intelligence and professional registration being deemed to be less of an issue by most ultrasound providers and practitioners, the development of an undergraduate programme for sonography education was slowly becoming a reality; driven by government in a response to meet increasing service demand and to redress the shortage of sonographers. However, as highlighted by Thompson (2009) and SOR (2013), there was no professional consensus as to what the clinical role of the sonographer practitioner at band 5 would be; no agreed band 5 clinical competence framework existed for this level of ultrasound practice making the development of an appropriate undergraduate sonographer programme problematic. The Health Education North West report (Waring *et al.,* 2015), which gathered data from interviews with twenty ultrasound department leads (in that region) concerning the future education of the sonographer workforce, suggested that the undergraduate sonographer model was the most plausible long-term solution to the workforce crisis. However, with no clear sonographer

career structure or role definition for the graduate sonographer, there remained professional unease and resistance to implementing this solution (Waring *et al.,* 2015)

To develop a career framework from the highest to the lowest band provided a challenging dilemma for ultrasound as professional roles were typically developed from the lower levels of practitioner and built on to achieve the higher levels of advanced and consultant practitioner as outlined in Agenda for Change (2004) and underpinned by the NHS Knowledge and Skills Framework (2006). The sonographer workforce faced a similar dilemma to that experienced by the medical profession with the introduction of the Physician Assistant/Associate grade, working backwards from consultant practice to that of practitioner.

The Physician's Assistant (PA) role was developed in the United States of America (USA) as a response to the workforce deficit in the medical profession, increased service demand and limited resources (Drennan, Levenson, Halter & Tye, 2011; Gerrie & Hollbrook, 2013; Ho & Maddern, 2011; Hooker & Everett, 2012); similarities could be drawn to that of the situation of sonography in the UK. The Physician's Assistant was defined by The American Academy of Physician Assistants as being a health professional who practiced medicine as a member of a team under the auspices of a supervising physician (http://www.aaap.org (accessed 2016).

The PA function was described as being similar to that of a nurse practitioner, providing a further grade level within medical practice (Gerrie & Holbrook, 2013). The impact of implementing this lower grade of practitioner within medicine (the PA) in USA and Canada was reported as being financially beneficial yet provided safe and effective care within an integrated care environment (Hooker & Everett, 2012). However, the development of the PA programme within the UK faced the same issues as undergraduate sonographers concerning registration and regulation, professional resistance and acceptance and discrepancies in defining the PA role (Drennan *et al.,* 2011; Gerrie & Holbrook, 2013). Despite the inevitable barriers, the PA role

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continued to move forward with more UK HEI's developing programmes and in the USA there was predicated to be a 30% rise in the PA workforce by 2020. Interestingly the Physician's Assistant USA title was changed to Physician's Associate in the UK even though the role of this grade was identical.

With the current workforce crisis of doctors in primary care the influx of PA's within the medical workforce was more than likely to be mirrored in the UK (Drennan *et al.*, 2011; Gerrie & Holbrook, 2013). Initially the development of Physician's Associate training programmes was slow, however, in January 2016 it was reported that 15 Universities in England and Scotland were providing training for the Physician's Associate role; this was in response to meet the government agenda of having 1000 PAs working in primary care by 2020 (Van De Dreisschen *et al.*, 2016). Furthermore, a survey of 20 NHS Trusts investigated the adoption and deployment of PAs in primary care and found that Trusts employed several PAs across a range of services to fill gaps in medical staffing; employment of the PA within primary care was mainly hindered by the short supply of PAs to recruit (Halter *et al.,* 2017). The evidence from literature, at the time of writing, would suggest that the rise in the PA workforce as indicated by Drennan *et al.,* (2011) and Gerrie and Holbrook (2013) was indeed mirroring that of the USA. The author suggests that the innovative approach of introducing a lower support grade to redress the workforce shortage in medicine may provide a platform for re-evaluating career frameworks for other professions experiencing a workforce crisis (such as sonography) encouraging skill mix to provide a more cost effective and efficient service.

1.4 The Ultrasound workforce

In 2012, the Centre for Workforce Intelligence (CfWI) was commissioned by the Department of Health (DoH) to explore the potential risks and key issues that faced the National Health Service (NHS) across all the health professions. Diagnostic Radiography was identified as a profession in crisis with an expected rise of 17% in the number of Diagnostic Radiographers required to meet service needs and therefore it remained on the Migration Advisory

Committee (MAC) shortage occupation list. Diagnostic Radiography, as indicated previously, provided the main source of professionals for sonography training (most sonographers trained first in diagnostic radiography thereby drawing down on an already depleted workforce (Migration Advisory Committee, 2015)) suggesting that the workforce deficit in diagnostic radiography was a major reason for the sonographer workforce being in crisis. However, very little factual evidence concerning the sonographer workforce, at this time, was available to determine the extent of the crisis.

The ultrasound workforce was predominantly underpinned by diagnostic radiographers undertaking postgraduate training (MAC, 2015). Edwards (2009) suggested that midwife sonographers, whilst on the increase (and a profession that was having its own workforce challenges) only accounted for approximately 197 practicing sonographers in the UK and some of those did not hold accredited formal qualifications. In 2011, the Society and College of Radiographers (SCoR) undertook a survey of ultrasound departments in the United Kingdom (UK) to ascertain the current state of the workforce with a focus on staffing and vacancy levels. The findings of the study closely mirrored those found by the CfWI with a 10.9% whole time equivalent (WTE) vacancy rate amongst the respondents (SCoR, 2011). Furthermore, this was documented to be increasing with a more current vacancy status being reported nationally at 12% (Parker & Harrison, 2015). However, Thompson (2014) reported a vacancy rate of 18.1% and there was evidence that some regions were reporting WTE vacancy rates as high as 20% (HEEM 2014). Whilst the challenges of acquiring robust data concerning an unregistered occupational group, which did not have its own MAC occupation code (being grouped with radiography), were evident in the different vacancy rate percentages reported, all did agree that there was a significant deficit in the UK sonographer workforce.

The workforce issue in ultrasound was not a new problem; the British Medical Ultrasound Society's (BMUS) paper "Extending the Provision of Ultrasound services in the UK" (2003) highlighted that ultrasound training was failing to keep up with the service demand for, and natural wastage of, sonographers.

This was further supported by the Consortium for the Accreditation of Sonographic Education (CASE) who found (in their survey of UK accredited programmes) that less than 200 sonographers completed their training in 2009 (Thompson, 2009).

Sonography had been identified on the shortage occupation list for over five years (MAC, 2015) and had become a Government priority. The 2015-16 Government mandate to Health Education England (HEE) explicitly identified the sonographer workforce as being key to delivering integrated care; requesting that HEE worked closely with the Diagnostic Steering Advisory Committee to ensure that sufficient numbers of appropriately trained sonographers were provided to deliver services and meet future service demand (DoH, 2016). To facilitate HEE in workforce planning the CfWI were, for the first time, commissioned to investigate the sonographer workforce in isolation from radiography.

The CfWI published its report in March 2017 indicating the following:

- most staff providing ultrasound services worked in radiology and diagnostic imaging
- diagnostic radiographer was the most common job role
- non-medical staff made up around 83% of the core workforce – 71% of which were radiographers
- about 80% of the total ultrasound workforce were women; women accounted for 88% of the non-medical workforce
- around 33% of all women who provided ultrasound were aged 50 plus
- agency, locum and bank staff made up around 12% of the total ultrasound workforce
- agency staff accounted for around 8% of the total ultrasound workforce
- the vacancy rate across all HEE local teams at the time of survey was around 10%
- the total long-term vacancy rate across all HEE local teams at the time of survey was around 4%
- a postgraduate diploma in medical ultrasound was the most common qualification currently held, and being studied for
- insufficient training staff available' was cited as the most likely reason why departments would not offer, were undecided, or planned to reduce ultrasound training in the future
- overall ultrasound activity was increasing but the rate of increase appeared to be slowing.

Centre for Workforce Intelligence (2017, pg7)

In summary, the report indicated that the sonographer workforce was predominantly non-medical, drawn mainly from the radiographer workforce, and educated to postgraduate level. There was a consistently high vacancy rate, with increasing problems expected in the future due to the large pre-retirement

workforce.   Whilst the findings of the CfWI (2017) could be argued not to have indicated anything new, for the first time, it provided a comprehensive report concerning the sonography workforce. Due to the fragmented structure of how sonography services were delivered it was argued, however, that this survey might not have been representative of the national picture of sonography (CfWI, 2017). The CfWI (2017) survey could be argued to have provided weight to the HEE drive for the exploration and implementation of alternative training options, such as an undergraduate BSc, for the maintenance and ultimate increase of the sonography workforce that would meet the increasing demand for ultrasound services.

The steady growth in the demand for imaging services overall had been widely documented, but it was the most recent CfWI (2017) report, focusing on ultrasound services in isolation, that provided the first substantial evidence that demonstrated the extent of the increase in demand for ultrasound imaging; stating a 9.4 % increase between 2013-14 and 2014-15 period which indicated a growth of 4.6%. The increased demand for ultrasound imaging was linked to increasing government targets (especially around cancer care), delivery of national screening programmes (such as those seen in obstetric and vascular services), new protocols for stoke management, reduction in risk thresholds for GP referral of patients with suspected cancer to further investigations, the introduction of 24hour -7 day working and the increasing aging population (CfWI, 2017; Office of National Statistics, 2014; Parker & Harrison, 2015; RCoR, 2016).

CfWI (2017) highlighted that the highest users of ultrasound imaging were the age groups over 65 years (22%) and 25-34 years (23%); the 25-34 years age group was argued to be mainly populated by patients accessing ultrasound imaging as part of the obstetric screening programme. The CfWI (2017) figures supported the suggestions that the increasing ageing population and national screening programmes were key drivers for the increased demand for ultrasound services. The RCoR (2016) report to HEE, using data from the Office of National Statistics concerning hospital outpatient activity, highlighted that 40% of all radiology attendances in 2013-14 were over 60 years of age and

that patients in age groups of 60-64 and 65-69 used the radiology services the most; this compared to the CfWI (2017) report that indicated this same patient group was one of the highest users of ultrasound imaging. In addition to this, there was evidence from the Office of National Statistics that the ageing population in the UK (over 65 years) would increase from 14.4 million in 2013 to 17.3 million in 2022 and up to 20.8 million in 2032 suggesting that the demand for imaging and ultrasound services was projected to escalate further. The drive to address the sonographer shortage was imperative to maintain the service in the future.

1.5 Conclusion

Sonographers had gone from being "trailblazers" in extended practice to being stagnant with very little career structure development since 1990's (Hart & Dixon, 2008), however, the experience of the midwifery profession with the development of an undergraduate provision along with the innovative development of the lower medical grade of PA suggested that there may be many lessons that sonography could learn to future proof their practice. However, after years of procrastination within sonography about how to address the workforce challenges, mounting political pressure (in the form of DoH HEE mandates) to find a solution had brought the issue to the forefront.

The HEENW report (Waring *et al.,* 2015) suggested that there was a reluctance from sonographers toward the implementation of the graduate sonographer. Although respondents felt it may be a valid solution in the long term, it was indicated that the graduate sonographer role was "not wanted" in that region. A collective reluctance amongst sonographers to define the role and clinical competences required of a graduate sonographer had been previously acknowledged (Parker & Harrison, 2015; Thompson, 2009), however, there was very little explanation as to the extent of this resistance, where it was rooted and its impact. Thompson (2009) suggested that the development of a graduate sonographer programme and the subsequent employability of a graduate sonographer in the absence of any consensus on the role and clinical competences required posed great challenges for both educators and

employers. The SCoR (2013) indicated, that prior to the implementation of graduate sonographer education and employment in the workforce, a more in depth understanding of the role and clinical competences was required to facilitate a wider adoption of the new grade of sonographer.

1.6 Aims and objectives of the study:

The project aimed to explore the attitudes, opinions and perceptions of a sample of practicing sonographers concerning the possible introduction of the graduate sonographer role and the subsequent development of a skill mix from band 5 to 8 within ultrasound services. Whilst initially the project was intended to only have one round of interviews the emerging complexities, entwined within the attitudes and opinions of the participants indicated a need to conduct the study in two phases to enable a more considered answer to the research question

"What are the individual attitudes and opinions of sonographers towards the role of the graduate sonographer?"

This research aimed to explore:
1. The attitudes and opinions of the participants toward the role of a graduate sonographer (phase 1)
2. The participants' view of their working world (phase 1 and 2)
3. The culture of sonography and its influence when implementing change in education and career frameworks (phase 2)

The objectives for this project were to:
- undertake a review of the literature to provide a frame of reference for the findings of this project (aim 1, 2 and 3)
- conduct two phases of semi-structured interviews on a purposively selected sample of currently practicing sonographers (aim 1 & 2)
- analyze the data using an inductive thematic analysis approach (aim 1 & 2)
- interpret the findings in order to interpret the "world view" of the participants (aim 1,2 & 3)

- make recommendations from the findings that could inform sonographer workforce planning and sonography education provision (aims 1, 2 & 3)

1.7 Summary of Chapter One

This research aimed to explore the attitudes and opinions of practicing sonographers with relation to implementing changes to the career structure for sonography and how future sonographers may be educated. The practice of sonography was deemed to be the "trailblazer" for role extension and yet for over 20 years there had been little change in how sonographers were recruited, educated and developed.

A professional culture had developed through the creation of this specialist area of ultrasound practice, but this had led to stagnation and a restrictive almost singular career structure with very little expectation for development to higher levels of practice.

Exploration of sonographers' attitudes and opinions may provide a greater understanding as to why sonography had remained unchanged for twenty years and what steps were needed to ensure sonography could evolve to meet the challenges of the future alongside other professionals.

Chapter Two

Review of the Literature

2:1 Introduction

An initial review of the literature was undertaken to explore what was understood about clinical competence and how clinical competence frameworks were used within health that supported phase one of the study. The review of the literature presented here provided a critical narrative that enabled the researcher to contextualize clinical competence and its impact on the clinical role thereby providing supporting evidence for Aim 1 of the research study. Following on from the initial review for phase one of the study a second search of the literature focusing on professional culture, professionalism and professional identity was undertaken to support aims 2 and 3 of the research project. The second literature search enabled the researcher to consider connections (that were indicated in the first phase of the research project) between clinical competence articulation and professional identity and culture.

Both stages of the literature search informed the research focus of the study; identifying gaps in the subject knowledge that required further exploration. A critique of the research methods employed in the literature also provided the researcher with a rationale for undertaking the methods employed in this study. The breadth of research methodology included in this review provided a rich source of knowledge concerning the current understanding of the world of the sonographer with regards to clinical competence, professional culture and identity. The themes identified within the literature reviewed provided two foci for the discussion; clinical competence and capability and the world of the health professional.

2:2 Literature Review Methodology

Throughout the research fraternity there was much debate concerning the credibility of literature reviews as a research method and it was from these challenges to literature review credibility that the systematic literature review

was born (Leach et al 2009). However, whilst it was noted that systematic literature reviews facilitated the researcher to answer a specific question and/or test theory by summarizing evidence from several research studies they did not provide a broad enough picture for more complex topic areas often found in qualitative research or enable a researcher to develop theories and create new hypotheses (Khan *et al* 2011). It was therefore imperative that the researcher understood the purpose of the literature review in order to undertake the most appropriate strategy ensuring validity (Leach, Neale & Kemp, 2009; Murphy & Yielder, 2009). Whilst the review of the body of literature was undertaken in a systematic way it was not the intention of the researcher to provide a systematic literature review.

The purpose of the literature review was to develop a critical narrative of the existing body of knowledge that provided a conceptual background. The identification of controversies and "gaps" in knowledge within the literature that required further research and consensus of understanding aided the researcher in the development of the research methodology (development of interview strategy and identification of sample population).

2:2.1 Research Question

Polgar and Thomas (2013), Leach *et al* (2009) and Aveyard (2010) concurred that framing a review question was crucial to a literature review achieving its purpose. Furthermore, the review question should be clear and unambiguous but at the same time not be too focused as to exclude knowledge not considered by the researcher at this early stage.

For the initial review of the literature the author posed the question **"What was understood about clinical competence?"** The question deliberately did not identify a single profession due to ultrasound practitioners coming from a wide professional background, therefore it was important to capture all professional perspectives. The author intended that the review question would provide a broader knowledge base of what was understood about clinical competence and the controversies surrounding its use to define clinical roles and frameworks. Professional body sonographer clinical competence guidelines

and standards were included in the review in order for comparisons from the wider literature to be made (Section 2.4 outlines in detail the phase 1 search strategy).

The second review of the literature was carried out to develop the author's understanding of the working world within which sonographers practiced. The second review question was **"What is understood about professional culture and professionalism?".** A wide context of health professions (rather than focused to sonography) was reviewed so that the author could develop an understanding of how sonography compared to other professional groups.

2:3 Search Strategy

The parameters under which the researcher conducted the literature search was termed collectively the search strategy and included the identification, retrieval and appraisal of the literature to be used in the reviews. Aveyard (2007) and Polgar and Thomas (2013) suggested that literature searches were, in the main, conducted using electronic search databases as these provided a massive library of historical and current literature that was easily accessed and retrieved. However, as well as undertaking a search through the SHU library gateway using the databases described in Table 1, a hand search of journals and reference lists was also carried out to ensure as much literature as possible was identified and appraised, thus creating a rich source of data.

The potential to identify an extensive pool of literature using electronic databases was argued to be problematic and could adversely affect the quality and relevance of the literature review (Aveyard, 2010). It was therefore important to search using keywords and search terms that reflected the key variables and concepts (Leach *et al* 2009).

DATABASE	RATIONALE
MEDLINE	About 11 million abstracts and citations Research included are medical and nursing issues relating to clinical practice, research and health care.
CINAHL Plus with Full Text	Literature from nursing and Allied Health Professional research Generic Contains journal articles and books
PUBMED	Citations to over 21 million journal articles but very few books – linked to MEDLINE
Science Direct	Over 10 million articles Literature from engineering, health, medical and technical science and physical science
Google Scholar Internet Search Engine	Peer reviewed online journals and non-peer reviewed journals European and American scholarly publishers and books

Table 1: Database Justification

2:3.1 Retrieval and Appraisal of Data

The details of the literature identified from the search were entered into an extraction matrix; this provided the researcher with a quick reference to the key information included in each piece of literature reviewed such as central aim, research design and sample population. Leach *et al.* (2009) and Aveyard (2010) both suggested that, when appraising the literature, a critical appraisal tool should be utilized to ensure a systematic appraisal of the literature was achieved. It was argued that there was no gold standard for the choice of critical appraisal tools for any study design including systematic review and qualitative study design (Katrak, Bialocerkowski, Massy-Westropp, Kumar & Grimmer, 2004). The lack of consensus on quality criteria for qualitative research was argued by Murphy and Yielder (2009) to create confusion amongst researchers and could adversely affect the rigour and trustworthiness of the findings.

The Critical Appraisal Skills Programme (CASP) tool was initially used to examine the literature and thereby identified the trustworthiness of the research and the relevance of the findings to the context of this study. (CASP, 2017. *Making Sense of Evidence.* Retrieved 10.07.2017, from http://www.casp-uk.net/criticalappraisal). Although it was argued that the GRADE system, as

advocated by the latest Cochrane review, could determine more effectively the quality of a body of evidence, using grading against the presence of five factors, this approach was more relevant to the undertaking of systematic literature review and not an extended review of a body of literature (Higgins & Green, 2011). However, whilst the purpose of this literature review was to explore a body of literature to provide context, the author did include within the quality appraisal assessment the factors of within-study bias (methodological quality), directness of evidence and risk of publication bias.

2:3.2 Analysis

To identify the key concepts, theories and make connections between the studies reviewed Leach *et al.* (2009) suggested that the reviewer needed to organize and classify the information and thereby create a framework in which to present new meaning from the literature reviewed. It was the author's intention to frame the discussion using inductive thematic analysis. Inductive thematic analysis enabled the researcher to search for common themes/threads that extended across the range of literature which provided nuanced and detailed analysis.

2.4 Phase 1: Review of the Literature Methodology

The search was conducted in two phases, first profession specific and then multi-professional. On the initial search the keywords "Ultrasound clinical competence" and "sonographer clinical competence" or "Sonographer proficiency" or "sonographer professional standards were used (it was deemed necessary to use BOOLEAN operators to search for terms that were from the same concept such as "ultrasound and sonographer and "Competence or Standard or Proficiency"). The use of the BOOLEAN operator ensured that the search was inclusive using alternatives for each search term.

The initial search returned 715 citations; once peer reviewed, date (1997-2017), English and subject terms restrictions (Clinical competence, competence, professional competence) had been applied 48 citations were screened for eligibility using the inclusion and exclusion criteria (appendix 1). This ensured

that the literature retrieved was justified and uniform therefore enhancing the quality and rigour of the search process. No articles identified by the databases were deemed relevant to this study so a hand search for articles, documents and reference lists was undertaken resulting in 9 professional documents being included in the review as indicated on the initial PRISMA (2009) flow chart (Appendix 2).

An extended search was undertaken removing the restriction to ultrasound and sonographer in the keywords. This returned a considerable number of citations and required the very focused subject term of *clinical competence* to be applied. 870 citations were screened for eligibility using the inclusion and exclusion criteria (appendix 1), resulting in 63 pieces of literature being scrutinized for relevance to the review question.   The literature search following the process outlined in the wider literature PRISMA (2009) flowchart (Appendix 3) resulted in 27 articles that were include in the initial literature review supporting phase 1 of the study.

2:4.1 Phase 1: Literature Quality Assessment

After entering the articles in the critical extraction matrix (appendix 4) key information about the articles was cross referenced. The 27 articles that met the inclusion and exclusion criteria included 12 primary research articles, 12 systematic literature reviews and three reports. All 12 primary research papers were from a qualitative perspective using either qualitative research tools or mixed methods with the theoretical drive of the study being from a qualitative perspective. The research methods employed in the primary research projects were mainly interviews followed by surveys, focus groups and the Delphi method. A further 9 sources of literature from Government and Professional bodies were included in the review to gain a political and regulatory perspective.

The distinct preference for qualitative research methods by health professionals, (as supported by this review of the literature) was identified by Cardinal *et al.* (2004) who suggested that the epistemological stance of a researcher was often influenced by their professional culture. Whilst Cohen, Manion and Morrison (2007) argued that a purely positivist approach to

research in health care was problematic and did not capture rich and complex data, it was also argued that a purely qualitative approach was also flawed (Appleton & King, 2002). Doyle, Bady and Byrne (2009) suggested that there was a fundamental shift toward a mixed method approach to research in health care.

None of the primary research articles identified using pilot studies prior to collection of data. Gray (2014) advocated that piloting of interview questions, surveys and questionnaires was essential to ensure accuracy and consistency, reduce ambiguity and decrease researcher bias. Piloting of the research tool ensured validity and reliability of the data collected (ibid). Silverman (2010) also agreed that pilot studies were an essential component of good quality research whether it was quantitative or qualitative. However, when adopting a constructionist model for the research project it was argued that piloting an interview could adversely bias the co-constructed phenomena between interviewer and interviewee and was therefore ill-advised (Rapley, 2004). Researchers argued for and against the use of piloting the research tool and therefore the non-disclosure of the use of pilot studies within the studies reviewed was not used as an excluding factor.

Data analysis for both the primary research and systematic literature reviews involved the ordering, structuring and organization of data. The literature reviews, that identified the analytical approach, used thematic content analysis; this is suggested to be the most commonly used approach for qualitative reviews of literature (Marshall & Rossman, 2011). The primary research articles also used thematic coding for the analysis of the data however only one article documented using the statistical software package CAQDAS v5.2 to determine accurate levels of consensus. The remaining studies used descriptive and interpretive analysis undertaken by the researcher with external verification to determine levels of consensus.

Ethical approval was identified in only four of the 13 primary research articles; two did not require NHS ethics and research and development approval as it was deemed that the participants were competent to give consent and there was no prior relationship between researchers and participants; one article

documented that relevant university ethical approval was obtained and one gained approval from the Research Ethics committees of all hospital and universities involved in the study. The remaining primary research articles that did not document obtaining ethical approval included studies that used professional groups as the participant sample and therefore it could be assumed that ethical approval was also not required and therefore not documented. The lack of documentation of ethical approval within the publications, whilst raising concerns about the governance and quality of the methodology, did not exclude them from the review.

2.5 Phase 2: Review of the Literature Methodology

The literature search that supported the second phase of the study was developed to explore what was understood about culture and professional identity within health occupations. The search was not restricted to sonography as the researcher wanted to explore the broader context of professionalism and professional identity across different health professional groups due to sonographers coming from a wide variety of professional backgrounds. The search strategy followed the same structure as for the first phase literature review. Keywords such as "professional culture", "professional identity" and "professionalism" were used. BOOLEAN operators such as "professional or occupational" were used to ensure alternatives were included in the search.

The initial search returned 217 articles for professional culture, 267 articles for professional identity and 664 articles for professionalism. Duplicates were removed, resulting in 367 peer-reviewed pieces of literature for further scrutiny. Inclusion and exclusion criteria (Appendix 5) were applied removing a further 88 articles. After full text appraisal, it was deemed that 22 pieces of literature were relevant to the research (Appendix 6: PRISMA Flowchart).

2:5.1 Phase 2: Literature Quality Assessment

The articles were entered into the critical evaluation matrix for cross referencing (Appendix 7). The 22 articles that were deemed relevant to the research topic

included twelve primary research articles, nine literature reviews and one case review. Apart from one literature review research paper, none of the literature review research papers illustrated the search strategy and analytical approach undertaken (the omission could be argued to be probably due to journal word limit constraints). Whilst concerning (not being able to assess the rigour of the research process) the papers were included in the review as it was felt by the researcher that these papers provided a depth to the critical narrative.

The twelve primary research papers all used a qualitative approach to gather and analyze the data primarily concerned with values, attitudes and perceptions. The most popular method was case studies accounting for eight of the primary research papers; only one of these was a comparative case study project. Other approaches used longitudinal cohort study, mixed methods, field trial and focus groups as the methodology for investigating the research topic. Thematic content analysis was most popular amongst the studies that used interviews (semi and open) and focus groups.

The diverse research methods and tools for collecting data in the primary studies provided a rich source of data that could be compared and critically evaluated against the findings of the literature reviews, thus enhancing the validity and reliability of this critical narrative.

2.6 Literature Review Discussion: Critical narrative

The author critiqued the literature to explore what was already known about clinical competence and professional culture within health. Although two distinct reviews of the literature were undertaken, (Feb 2015 and December 2015) to support the two phases of the project, the findings were intertwined. The discussion will firstly explore what is understood about clinical competence and how it is used within health professions, followed by an exploration of professionalism and professional culture which will contextualize the world of the health professional.

2.6.1 Phase 1: Contextualizing Clinical Competence and Capability

There will be five aspects of clinical competence and capability explored including: defining competence, professional standards, scope of practice, frameworks and assessment and training.

2.6.1.a Defining competence

Core competency benchmarks for health professional groups in Australia, United States of America (USA), and New Zealand were first developed in the 1980's and not until 2000 for the United Kingdom as a response to the growing public interest for professional accountability (Gardner *et al.,* 2006; O'Connell *et al.,* 2014; Verma *et al.*, 2006).   It was this professional preoccupation with clinical competence that resulted in the need for to it to be investigated, defined and ultimately measured (Cowan *et al.*, 2007). However, the concept of competence was poorly defined within the literature especially when concerned with defining professional clinical competence (Banning, 2012; Cassidy, 2009; Cowan *et al.*, 2007; O'Connell *et al.,* 2014; Norman & Coopamah, 2007; Windsor *et al.,* 2012). Differentiating between competence and competency was fraught with disagreement. McMullan *et al.*, (2003) (cited by Cowan *et al.,* 2007) stated that confusion surrounding the definition was born from the inconsistent and interchanging use of competence, competency, capability and performance.

Cowan *et al.*, (2007) undertook a systematic review of the literature to develop a definition of the concept of nursing competence. The review found that there was very little consensus on the definition of nursing competence suggesting a wealth of ambiguity, contradiction and confusion; findings which were later supported by Yanhau and Watson (2011). This lack of agreement concerning the definition of competence was also apparent in medical practice (Epstein & Hundert, 2002). Gardner *et al.,* (2006) suggested that competence was an ambiguous notion not supported by evidence-based research. The lack of consensus concerning clinical competence could be due to the multifaceted and dynamic concept of competence amongst, and within, occupational groups (Banning, 2012; Lester, 2014; Verma *et al.,* 2006).

Butler *et al.,* (2006) argued that, whilst defining competence in midwifery practice was problematic, the articulation of clinical competence was crucial in being able to develop the scope and sphere of professional practice.   Cowan *et al.,* (2007) found that defining competence was complicated by the need to differentiate between competence and competency. Whilst competence was often defined as the ability to perform a task to an expected level (essentially what a person can do); competency was concerned with the behaviour that underpinned the action. The Oxford Dictionary of English (2015) supported and provided clarity to Cowen *et al.,'s* (2007) differentiation of the terms (often used interchangeably) when discussing competence. Competence was defined as an individual's ability to do something successfully; competent was an individual who had the ability, knowledge or skill to undertake a task successfully; core competency was an occupational defining capability or a specific level of competence in an occupation. Cowan *et al.,* (2007) concluded their review suggesting that competence was the complex combination of knowledge, performance, skill, values and attitudes; thus, suggesting that competence and competency could not be subdivided, and further research was needed to develop a more holistic approach to defining competences.

Turrill (2014), whilst acknowledging competence had been traditionally difficult to define, suggested that it was possible to identify quantifiable professional characteristics that could be used to determine clinical professional competence. The key characteristics identified were concerned with the integration of knowledge and skills with clinical practice (Lejonqvist *et al.,* 2012; Turrill, 2014). These fundamental elements of competence were also supported by Butler *et al.,* (2006), Cowan *et al.*, (2007), Gardner *et al.,* (2005), Homer *et al.,* (2007), Kaslow *et al.,* (2007), O'Connell *et al.,* (2014), Verma *et al.*, (2005) and Windsor *et al.,* (2012). However professional attitude and values, effective communication along with safe practice and self-awareness, were also highlighted as key components required of the competent practitioner (Butler *et al.*, 2006; Cowan *et al.,* 2007; Homer *et al.,* 2007). Epstein and Hundert (2002) succinctly outlined the foundations of competence to include clinical skills, scientific knowledge and moral development. The core competences identified were often referred to as domains of practice within the literature (opcit) and

found to be embedded in most health profession's clinical competence frameworks, such as the 4-tier model (DoH, 2003).

Verma *et al.*, (2005) explored the core competences across medicine, nursing, occupational therapy and physiotherapy identifying common core competences across the different professional groups. The commonalities identified were professional accountability, knowledge, communication and application of knowledge in practice. The recognition of different health professional groups having generic core competences was outlined in the Health and Care Professions Council (HCPC) (2013) Standards of Proficiency for the 14 professional groups, the Canadian National Competency Profiles (2014) and the Victorian Government (2014) Allied Health Capability Framework. However, the requirement to outline profession specific competences that addressed technical and practice specific skill requirements across all occupational groups was also noted.

Competence was often used interchangeably with capability (O'Connell, 2014); however, Banning (2012) argued that there were differences between competence and capability; suggesting competence as being a measurable skill assessed against a standard whereas capability was the holistic ability to adapt and change, endorsed by Cowan *et al.*, (2007) and Benner (1984). Capability facilitated the integration of knowledge, skills, attitudes and values in response to various scenarios demonstrating high levels of self-efficacy (Banning, 2012; Cowan *et al.,* 2007). However, it was suggested that competence and capability shared similar foundations in basic skills and knowledge and that they were part of a transformative continuum; competence was suggested to be an attribute of capability (Banning, 2012; O'Connell et al., 2014).

The concept of a continuum from competent to capable practice was explored by Patricia Benner (1984) as cited by Cowan et al., (2007); the significance of the concept of a continuum is apparent when considering the differences in practice from a newly registered practitioner to advanced and consultant practice and when defining competence. It was argued that competences were prescriptive in their very nature and therefore only appropriate for graduate

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newly registered practitioners (band 5 and 6 practitioners). As the professional moved towards advanced practice, competences were argued not to adequately define the complexities of the clinical requirements (Chiarella *et al.,* 2008; Gardener et al., 2006; O'Connell, 2014). The capable practitioner, in comparison to the competent practitioner, was adaptable in unfamiliar situations, able to problem solve and was confident in their own ability (Banning *et al.,* 2012; Chiarella *et al.*, 2008; O'Connell, 2014). In the author's opinion, capability could be argued to be an extension of practice beyond competence and therefore suggests that capability would better define the role of the sonographer at band 7 and 8.

The primary purpose for identifying and measuring competence in health care practice was fundamentally to protect the public from harm by incorporating the concept into legal, ethical and regulatory frameworks (Bentley & Dandy-Hughes, 2012; Butler et al., 2008; Lester, 2014; Verma et al., 2005). However, sonography (at the time of writing) did not have a regulatory body; each practitioner was legally and ethically bound by their primary profession. This arguably posed a dilemma when developing clinical competence frameworks for the graduate sonographer. Further purposes for defining clinical competence standards were identified as: a method to communicate to service users and other professional groups the benchmark professional standards of competence, to inform the development of training curricula, to determine the eligibility to practice (credentialing) at entry to the profession as well as returning to practice, international mapping and on-going monitoring, performance management, to inform job descriptions, personal specifications and career progression (Chiarella *et al.,* 2008; Homer *et al.,* 2007; Singh *et al.,* 2010). Verma *et al.,* (2005) succinctly described the purpose of clinical competences as being to define discipline, practice and specialty which was further endorsed by Chiarella *et al.,* (2010) who stated that competence standards gave professional standing and identification of the clinical role.

In conclusion, it was evident from the literature that clinical competence outlined in a professional standards framework facilitated the articulation and communication of the definition of practice that specific professionals were

expected to perform at different levels. The definition of practice created a unique professional identity, not only for the practitioner but also for the public (Chiarella *et al.,* 2008; Homer *et al.,* 2007; Singh *et al.*, 2010).

2.6.1.b Professional Standards

Clinical governance had become an increasingly important aspect of health care delivery as increased vigilance, professional accountability and individual responsibility had defined medical and non-medical practice (Southgate *et al.,* 2001). Professional standards had become a means to monitor and ensure clinical governance (ibid). Threshold standards of practice defined the professional and instilled a sense of belonging, value and ownership to a professional group, thus it can be argued that professional standards provided the building blocks for professionalism (Bulley & Donaghy 2005; Butler *et al.,* 2006; Chiarella *et al.,* 2008).

It was generally agreed that professional standards were fundamental to safe practice and had a role in professional regulation, informing clinical practice and education planning (Andrist & Schroedter, 2001; Bulley & Donaghy, 2005; Chiarella *et al.,* 2008; Gardner *et al.,* 2005; HCPC, 2013; Victoria Government, 2014; Wing & Baines, 2014). Sonography Canada (2014) advocated that appropriate practice competencies must be measured against accepted standards in the profession; the standardization of clinical competences in practice was vital to ensure equitable quality of care and a safeguard for the public (Baker, 2006; Epstein *et al.,* 2002; Turrill, 2014). However, Southgate *et al.*, (2001) argued that formal standards were not appropriate for all levels of medical practice as they did not consider the more complex clinical situations/practice. It could be concluded that professional standards that indicated minimum threshold competences were useful in defining graduate, entry level professional roles and scope of practice but less appropriate when defining more advanced practice (Banning *et al.,* 2012; Butler *et al.,* 2008; Turrill, 2014).

Baker (2006) reviewed medical professional practice and defined a standard as a general description of what action was required. Professional standards that

reflected behaviour and performance levels expected of the practitioner in clinical practice were commonly determined by professional regulatory bodies. Baker (2006) argued that allowing professional regulatory bodies to solely set standards of practice was dangerous as this exclusive practice reinforced the power and dominance status of that professional group; historically this power status had been evident within the medical profession whereby minimum standards had been set by the General Medical Council (GMC) with little consultation with service users (Baker, 2006; Bloor & Dawson, 1994). This lack of engagement with all stakeholders was argued to reduce confidence in the minimum thresholds set, due to the lack of transparency and inclusivity in the process (Gardner *et al.*, 2005). It was suggested that a wider consultation involving patients, managers and policymakers should be undertaken when developing standards, competences and thresholds to incorporate different perspectives (opcit). Widening stakeholder involvement in standard setting facilitated the blending of evidence with opinion, thus providing a more robust and defensible standpoint that would increase public confidence (Butler, 2006; Gardner *et al.,* 2005).

Generic professional standards and competences that were relevant to all health professionals had been identified and adopted by most Allied Health, Medical and Nursing professional and regulatory bodies (HCPC, 2013; New Zealand Medical Radiation Technologists Board, 2011; NMC, 2008; Southgate, 2001). In contrast, in Australia the differences in practice, perspectives and values that were fundamental to each of the College of Midwives and the registered nurse competence standards fueled much debate in reaching an agreement on generic standards and competencies. The nursing competence standards adopted a more generic, broad ranging, list of standards whereas the midwifery standards were more specific to the tasks and scenarios found within midwifery practice (Homer et al., 2007). After a wide consultation The Australian National Competency Standards for the midwife (2006) used a more generic approach to setting competence and professional standards, rather than the historical task-focused approach.

The debate for and against generic competences and professional standards continued, with much emphasis on the diluting of professional identity (Michels *et al.,* 2012).   Professional identity, defined using the Social Identity Theory concept, was how individual professionals perceived and valued themselves in relation to others (Hall, 2005; Michels et al., 2012). The reluctance to blur professional identity was firmly linked to a value base; the value an individual placed on their professional identity and how the individual perceived other practitioners to value their profession (Hall, 2005).

The fear of dilution of professional identity was argued to be strongly linked to occupational protectionism which endorsed the maintenance of specialty and practice specific competences alongside the generic ones within the professional standards (Chiarella *et al.*, 2008). Occupational protectionism was reinforced by the strong affiliation to a professional identity which was jealously guarded through territorial behaviour; often actioned through the articulation of minimum threshold clinical competence standards for practice (Bate, 2000; Frenk, *et al.*, 2010; Hall, 2005). The protection of occupational territory was suggested to foster rivalry between professional groups, lack of collaboration and interprofessional working (Chiarella *et al.,* 2008). In an attempt to reduce the territorial behaviours between professional groups the standardization of practice across common core domains of competence was recognized as good practice that broke down interprofessional barriers (Verma *et al.,* 2005). Professional groups and regulatory bodies increasingly adopted the approach of identifying core generic skills, within their professional standards, that all practitioners must achieve whilst also acknowledging the need for profession specific competences (Chiarella *et al.,* 2008; HCPC, 2013; New Zealand Medical Radiation Technologists Board, 2011; NMC, 2008; Verma *et al.,* 2005).

The United Kingdom Association of Sonographers (UKAS, 2008) outlined professional working standards specific to Ultrasound. The guidelines, whilst providing a general overview of standards of professional competence required, also provided examination specific guidance, listing minimum threshold performance criteria expected. The identification that individual areas of clinical practice required unique competence standards was supported by the

competence profiles set out in the profiles devised by Sonography Canada (2014)   However, unlike the NMC and HCPC, UKAS had no legal standing as it was not a regulatory body and therefore had no legal platform on which to define the clinical role and scope of practice, providing guidance rather than threshold standards of performance (much the same as the SCoR).

Ultrasound (at the time of writing) was not a recognized profession and therefore had no discrete professional or regulatory body with which to consult. The articulation of sonographer advanced practice competences was created by a collective of professional groups (Thompson, 2009) and thereby it was argued that professional identity and protectionism should have been minimal. Interestingly, unlike the USA, the UKAS (2008) sonographer framework of competences only included advanced practice, omitting to identify direct entry/graduate sonographer competences. The reluctance to recognize practice competences below advanced practice could suggest that the collective of professionals demonstrated occupational protectionism; identifying tasks that could be undertaken by a lower level of practitioner could be perceived as devaluing the level of expertise and skills required in ultrasound and thereby threatened the occupational status.

2.6.1.c Scope of Practice

Articulation of standards of practice and competence thresholds were suggested to be fundamental to the development and determination of the sphere and scope of clinical practice (Butler *et al.,* 2006). Scope of practice was defined by the procedures, tasks and processes that the practitioner had received through education and demonstrated competence which was permitted by law (Andrist & Schroedter, 2001). The Victorian Government of Australia (2014) further defined the scope of practice as the delineation of the health practitioner's clinical practice which was dependent on qualifications, competence, performance and suitability as well as the organization's ability to support the professional within the clinical role.

The identification of competence standards, that enabled professional self-regulation, created clarity and definition of the clinical role and scope of practice

(Turrill, 2014). Minimum threshold standards needed to be used in conjunction with the scope of professional practice and were thereby suggested to be intertwined (Andrist & Schroedter, 2001). However, the appropriateness of using professional standards and minimum threshold competences to define advanced practice was questionable and it was argued that they should only be used to define the scope of practice for entry level practitioners due to threshold standard's inability to define practice in more complex clinical situations (Banning, 2012; Chiarella *et al.*, 2008; Southgate *et al.*, 2001). Verma *et al.,* (2005) disputed this, suggesting that the identification of core competencies within a framework facilitated the mapping of clinical roles and scope of practice both horizontally and vertically across a range of health care levels of performance.

2.6.1.d Frameworks

Frameworks provided an opportunity to achieve professional consensus on core competences and a shared understanding of the scope and requirements of a clinical role (DoH, 2011; Green, 2010; Verma *et al.*, 2005). Competence frameworks had a multitude of benefits, not least the ability to provide a mechanism of support to an adaptable and efficient workforce, as well as facilitate the ever-changing scope of practice found within health care professions (Green, 2010; Victorian Government, 2014). For a framework to support an ever-changing workforce it needed to be non-prescriptive, unambiguous and flexible to reflect the changing context of service delivery (Lester, 2014; SCoR, 2013).

The College of Radiographers (2004) developed the four-tier career model in response to the acute shortage of radiotherapists. This outlined the scope of practice from assistant to consultant practice by mapping the required skills and competences (performance indicators) for each level; thereby creating, not only professional recognition of the scope of practice, but also a career pathway that illustrated the continuum of professional development suggested by O'Connell *et al.,* (2014) to be the main purpose of clinical competence frameworks. However, it could be argued that the four-tier model was at odds with the suggestion that defined competences were only appropriate for entry level

graduate practitioners and not for the advanced and more complex levels of practice found at band 7 and 8 (Brenner, 1984; O'Connell *et al.*, 2014), therefore not fit for purpose. Lester (2014), after reviewing 40 UK professional standards concluded that the extent to which competence frameworks were fit for purpose was variable thereby casting doubt on the effectiveness of professional competence frameworks in articulating the scope and standard of practice of health professionals.

When developing a competence framework, the scope of practice, code of conduct and ethics and the changing face of service delivery all must be considered to ensure consistency and relevance (SCoR, 2013). Butler et al. (2006) advocated that the most important requirement at registration of any health care professional was that they were safe to practice. However, self-sufficiency, currency, an awareness of the clinical role and their own limitations, good communication skills and attitude should also be included in any model or competence framework (ibid). The NHS Knowledge and Skills Framework (2006) also included these characteristics in the six core dimensions that were applied to all levels of health service employees. Furthermore, the SCoR (2013) core disciplines of knowledge and skills, professional development, personal responsibility and reflective practice indicated the requirement for a highly professional workforce that was adaptable. The DoH (2011) competence-based career framework had some similarities to the KSF (2006), using National Occupational Standards to measure against performance levels in the determination of levels of practice from assistant to consultant practitioner. The purpose of the DoH (2011) framework was to primarily identify role, core and specific competences, education and training requirements, progression routes and regulation.

From the different frameworks reviewed it was clear that the purpose of a clinical competence framework was to focus on what a person could do and how they performed, measured against a standard with the primary focus being on the knowledge and skills required. In contrast, it was suggested that a capability framework which promoted the development of skills, behaviours and

attitudes required to deliver high-quality, safe and effective care would be more appropriate for extended and advanced practice (Victorian Government, 2014).

The UK HCPC Standards of Proficiency (2013) framework provided statements about expected competences for allied health professions; both generic and profession specific, for registrants direct at entry to the profession (with the omission of sonographer competences). In contrast, New Zealand and Australia both provided a framework of generic competences and skill levels for 5 scopes of practice within imaging as well as making statements concerning the minimum competences required to register and practice as a sonographer (Australian Institute of Radiography, 2007; New Zealand Medical Radiation Technologists Board (NZMRTB), 2011). Taking this into consideration, the United Kingdom Association of Sonographers (UKAS) (2008) guidelines for ultrasound practice (advanced practice) articulated minimum threshold competences even though it was argued that competence thresholds were more appropriate for graduate entry level practitioners.

The UKAS framework provided guidance on general and specific areas of professional practice and contained similar foci for practice as the Health and Care Professions Council (HCPC) (2013), National Occupational Standards (2010) and the Knowledge and Skills Framework (KSF) (2006). An interesting point to note was that the UKAS framework for advanced practitioners was very similar to the frameworks designed for graduate level practitioners. This suggested that the UKAS competence framework for sonographers was not relevant to their advanced clinical role, which required a higher skill set to undertake more complex clinical situations and therefore could be argued not fit for purpose. Furthermore, unlike the NZMRTB no guidance was provided in the UKAS framework for registrant sonographers at direct entry to the profession; the lack of recognition of graduate sonographers or any grade below advanced practitioner in sonography within UK clinical competence frameworks suggested that professional protectionism, if not driven by those that lead the profession of sonography was, at least, supportive of it.

The multiplicity of frameworks (in the author's opinion) exacerbated the confusion for professionals, employers and educators when trying to map professional roles and education learning outcomes. A single UK framework for sonography, developed collaboratively, that articulated appropriate skill levels from competence to capability was required; the literature suggested existing frameworks that had been adapted for sonography were not fit for purpose.

2.6.1.e Assessment and Training

Competence within the literature was consistently explored alongside assessment; how to determine the quantifiable characteristics that were assessed against an accepted minimum performance standard created much debate (Kaslow *et al.,* 2007; Turrill, 2014; Zasadny & Bull, 2015). Assessment provided a vessel for learning, evaluated progress, determined appropriateness of curriculum content and delivery and protected the public from unsafe practice (Kaslow *et al.,* 2007). It was acknowledged that core curriculum content of an education programme was explicitly linked to the clinical competences required in practice; it was this, and not the competences themselves, that provided the foundations and national consensus for the definition of the clinical role (Turrill, 2014).

The assessment of clinical professional competences was littered with difficulties; primarily concerned with the subjectivity of the process and the lack of empirical evidence to support preferred methods and tools for assessment (Cassidy, 2009; Epstein & Hundert, 2002; Gardner *et al*., 2006; Windsor *et al.,* 2011; Zasadny & Bull, 2015). It was argued that knowledge and skills were more easily assessed whereas the soft skills such as patient care, attitudes and interpersonal skills were more problematic for assessment as the rigour becomes questionable with the greater subjectivity from the assessor (Cassidy, 2009; Southgate *et al*., 2001; Windsor *et al.,* 201; Zasadny & Bull, 2015).

Ultimately, the successful assessment of clinical competences that a practitioner demonstrates leads to certification that provides assurance to the public. However, it was evident from the literature reviewed that there were many inconsistencies as to how the competences should be measured and

assessed. (Andrist & Schroedter, 2001; CASE, 2014; Cassidy, 2009; Epstein & Hundert, 2002). Epstein and Hundert (2002) argued that most assessments measured performance not competence as this was an inferred quality, therefore to ensure public safety and confidence in the profession clinical competence should be examined more holistically. A holistic appreciation of competence and its complexity was key for the facilitation of the development of the registrant from competent to capable professional (Cowan *et al.,* 2007; Gardener et al., 2006; O'Connell *et al.*, 2014) (graduate to advanced practitioner).

2.6.1.f Comparisons of Practice – Practitioner to Consultant

It was evident from the literature that consideration of the different clinical requirements of a newly qualified registrant to that of an expert practitioner needed to be reflected in the occupational expectations set out in the professional standards of practice. It was suggested that clinical competence threshold standards used to define advanced practice, as seen in sonography, were questionable due to the complex clinical situations found in ultrasound that required higher levels of skill (Chiarella *et al.*, 2008; Southgate *et al.*, 2001). It was argued that competence measured the ability to undertake a task (knowledge) not how to adapt and apply knowledge and skills to different situations which was required at advanced and consultant practice (Benner, 1984; Cowan *et al.*, 2007; Zasadny & Bull, 2015). This would suggest that, over time, practitioners developed from competence to a higher level of practice; competence could only be used to assess and define practice below advanced practice level (band 7 and 8). In the author's opinion, a capability framework rather than a competence framework would be more appropriate for defining advanced and consultant practice (band 7 and 8).

Benner (1984) was one of the first to explore professional practice progression and is still cited today even though there has been wide debate and critique of the narrow interpretative nature of the study (Cowan *et al.*, 2007). Benner used the Dreyfus Model of Skill Acquisition and adopted the levels novice, advanced beginner, competent, proficient and expert into nurse practice. The five competence levels demonstrated the progression in three areas of skill

performance depicting a transition from protocol guided practice (competent practitioner) to intuitive and autonomous practice (capable practitioner).

Direct comparisons from the Dreyfus model to that of the four-tier model were problematic due to the increased number of levels but some similarities to the banding structure in Agenda for Change (AFC) could be drawn. Table 1 demonstrates the author's interpretation of how the Dreyfus model used by Benner could be mapped to both the four-tier model and the Agenda for Change banding framework.

MODEL	Grade	Grade	Grade	Grade	Grade
DREYFUS (Benner, 1984)	Novice/beginner	Advanced Beginner	Competent	Proficient	Expert
4-TIER (CoR, 2004)	Assistant Practitioner	Practitioner		Advanced Practitioner	Consultant Practitioner
AFC (DoH, 204)	Band 4	Band 5	Band 6	Band 7	Band 8

Table 2 Practitioner model comparison

The four-tier model appeared to be at odds with Benner's model with no identified competent level. However, the Agenda for Change framework that was developed from the four-tier model did identify a competent practitioner at band 6. Perhaps this was where the concept of the specialist practitioner that was competent in a focused area of practice should have been identified in the four-tier model. Benner's use of the Dreyfus model of skill acquisition, if applied to the four-tier model, would make a more complete and cohesive framework that could be used to define the career/skill progression and would link more consistently to the Agenda for Change framework used to determine remuneration for skills and performance.

2.6.1.g Competence Summary

The literature provided a broad overview of the current understanding of the concept of competence with an emphasis on clinical competence within health care. There was no literature identifying sonographer registrant clinical

competences in the UK. The lack of empirical research into sonographer clinical competences, whilst concerning, is not surprising as competence setting is usually driven by the professional bodies (Turrill, 2014). Sonography (at the time of writing) did not have a professional body as it was not a recognized profession and was therefore at risk of having non-standardized inconsistent practice (ibid).

The review of the literature identified that there were no United Kingdom national standards of competence for sonography although guidelines for ultrasound practice were published by UKAS (2008). UKAS was not a regulatory body and therefore the legal standing, accountability and assurance of public safety provided by these guidelines was questionable. New Zealand, Australia, USA and Canada all had government published competence profiles for sonography practice. Furthermore, these also had professional status through registration to a recognized and accredited sonographer licensing body (American Registry for Diagnostic Medical Sonography, Australian Sonographers Association, Canadian Association of Registered Diagnostic Ultrasound Professionals); however, it is acknowledged that sonography in these countries was a direct entry profession, unlike in the UK at the time of writing. The lack of ultrasound clinical competence standards defined by a regulatory body could be argued to be contributory factors as to why sonography was not a recognized profession in the UK.

Clinical competence was regarded as essential within health and social care, however, there was very little consensus as to the definition of clinical competence (Cowan *et al.,* 2007). The synonymous use of terms such as competence, competency, competencies, performance and capability added to the confusion of the context of clinical competence (ibid). However, there was agreement that there was a need to identify the professional characteristics to determine the clinical professional competences required. These characteristics were consistently identified as integration of knowledge and skills to clinical practice, attitudes, values, effective communication, safe practice and self-awareness. Epstein and Hundert (2002) succinctly listed the characteristics as scientific knowledge, clinical skills and moral development. Generic and specific

professional competences were deemed appropriate for each health profession however there was some debate as to the appropriateness of prescriptive competences beyond entry level registrant, with capability argued to be more appropriate for advanced practice.

There were many frameworks for clinical competence that mapped to minimum performance threshold criteria identified in the literature. All the frameworks reviewed were from either nursing, midwifery, medical, allied health professions or sport. The review of the literature indicated, at the time of writing, there were no UK clinical competence frameworks that mapped expected sonographer competences for all levels of practice.

There was a notable lack of evidence concerning the standardization of expected competences required in sonography practice and most guidance was concerned with the technical task orientated aspects of the different examinations. A framework for sonographer competences expected at each level of practice had not been developed, at the time of writing, even though these were in existence in other medical professional groups. The lack of evidence concerning clinical competences in sonography was most likely a result of no professional body taking responsibility for guiding and articulating professional expectations, which was supported by Turrill (2014) but could also be indicative of professional protectionism using specialty status (Ferris, 2009).

Professional standards and competences were intertwined across all professional groups and were deemed, overall, as positive. Professional standards provided consensus on the standardization of competences across a national picture and thereby created professional identity, professionalism and accountability as well as safeguarding the public. However, it was noted that professional identify affiliation and professional values created a platform for professional protectionism that had the potential to stifle change and growth within that profession (Chiarella *et al.,* 2008).

2.6.2 Phase 2: Contextualizing the World of the Health Professional

The world of the health professional will be contextualized through the exploration of four aspects: Organizational and professional culture, professional power, professional protectionism and implementing change.

2.6.2.a Culture – Organizational and Professional

The concept of culture had its roots in anthropological literature; it became increasingly applied to organizations and latterly professions, in the United States post Second World War, reaching its peak in the mid 1980's (Davies, Nutley & Mannion, 2000). Before exploring the concept of professional culture, it was necessary to gain an in-depth understanding of organizational culture within which professional cultures exist.

The term organizational culture was an elusive concept that had no consensus within the literature concerning its definition, however it was agreed that most organizational culture characteristics were fundamentally historical; a socially constructed heritage that was holistic and difficult to change (Bloor & Dawson, 1994: Hall, 2005). When exploring the concept of organizational culture there were two main perspectives, those being modernism and post-modernism schools of theory. The modernist perspective argued that culture was something that an organization was, a solid entity that was difficult to change; whereas the post-modernist perspective suggested that culture was something an organization had, variables that could be changed and managed (Davies, Nutley & Mannion, 2000).

The post-modernism perspective of being able to construct and reconstruct organizational culture was suggested to be the platform for Health Service management; constant cultural changes being driven by the political and social agenda (ibid). However, it was argued that when deep seated beliefs and values were held by members of the organization, even with external political pressure, high levels of resistance to change would exist. Resistance was particularly evident when there were powerful groups within that organization (for example the medical profession within the health service) (Davies, Nutley &

Manion, 2000) and arguably this power base had seen a rise within occupational groups such as sonographers.

Organizational culture was argued to emerge from a collective sharing of perceptions, beliefs, attitudes, values and an agreed norm for behaviour. This collective sharing facilitated sense making of their world (the way they judge, value and understand) in a similar and distinctive way (Bloor & Dawson, 1994; Davies, Nutley & Mannion, 2000). The complexities of organizational culture were acknowledged; several layers or levels to the concept of culture being identified (Davies, Nutley & Mannion, 2000). Culture, in its most simplistic form was characterized by three levels: the basic level of assumption (unconscious "taken for granted" beliefs that structured the thinking and behaviour); the value level of culture (represented by the standards and goals that were attributed worth) and the concrete artefact level of culture (the ceremonies, traditions and dress codes) (ibid).

 As previously alluded to, within an organizational culture there were co-existing sub-cultures which were created by different occupational or professional groups; seeking to differentiate themselves from one another by their own specific cultural values and artefacts (Bloor & Dawson, 1994; Davies, Nutley & Mannion, 2000). This would suggest that professional culture emerged from within the organizational culture, however, it was suggested that if the organization was dominated by one powerful professional group then the organizational culture could be defined by that particular professional culture (Bloor & Dawson, 1994).

Weber (1968), cited by Bloor and Dawson (1994), was influential in understanding organizational and occupational culture. Weber, (a renowned social theorist) in order to understand how professional collectives were formed, described a process known as social closure. Social closure (through the creation of an exclusive professional community) provided a mechanism whereby groups or collectives of people/professionals could restrict access to resources and opportunities (authority and income) to produce and maintain stratification amongst groups thereby creating a hierarchy. Social closure was

argued to be evident within the Health Service; where often decision making about policy and procedures was determined and dominated via the mechanism of social closure from the medical profession (the medical profession culture influenced the Health Service organizational culture) (Bloor & Dawson, 1994; Evans, 2008).

Professional culture or professional socialization was often associated with terms such as indoctrination, internalization, compliance and conformity (Clouder, 2003); being noted to be almost tribal within the Health Service with marked differences in professional culture existing between the different occupational groups (Bate, 2000; Davies, Nutley & Mannion, 2000; Richardson & Asthana, 2006; Timmons & East 2011). A profession could be defined as an occupational community that conformed to a set of acknowledged criteria; a profession seeks to gain control over their specific area of work through the development of minimum professional standards (threshold clinical competences), code of ethics, training and the development of specialized knowledge (Bloor & Dawson, 1994). By doing this they become an exclusive group of individuals as seen in such groups as physiotherapists, radiographers, nurses and the oldest professional group being that of doctors (Larkin, 1983; Witz, 1992, cited by Ferris, 2005). The author notes, that even though it can be argued that the occupational group of sonography met all the criteria required to be recognized as a profession, it had (at the time of writing) yet to achieve professional status. This may have had a bearing on the occupational culture within sonography.

Whilst sonographers, at the time of writing, were not a recognized professional group the author argues that they were an occupational community demonstrating all the characteristics of a profession outlined in the literature and thereby would also have had a strong professional culture to which the individuals subscribed. However, the complexity of sonographers, having a primary profession as well as the secondary profession of sonography, could create some difficulties especially in challenging times. Beales, Walji & Papoushek (2011) argued that, when an individual had more than one professional identity, the individual would regress back to their original

professional culture where their frame of reference was more deeply entrenched. This dual professional identity had the potential to create conflict, with regards to professional cultures within the sonographer community, as it could be argued that the original occupational affiliation that had professional status would be stronger than the secondary sonographer affiliation that did not; thus, creating further subgroups within the main occupational group (Beales, Walji & Papoushek, 2011).

As seen in organizational culture it was suggested that the dominant occupational culture within a subgroup would prevail (Bloor & Dawson,1994). Therefore, it was more likely that within the occupational community of sonography, where the radiographer was the most prevalent professional (CfWI, 2017), the radiography professional culture would be dominant, thus leading the decision making around professional development, practice and structure. Perhaps, this was why midwives who were working in a radiographer dominant occupational community chose to be known as midwife sonographers rather than as sonographers so as not to lose their professional identity. However, it was argued that familiarity with the primary midwifery occupational frame of reference provided a sense of security and identity within the radiographer dominated sonography occupational culture, rather than being an act of professional protectionism (Beales, Walji & Papoushek, 2011).

Occupational groups developed highly specialized, and to some extent exclusive, knowledge bases along with patterns or codes from which they constructed interpretations of their working world. Interpretations of people, events, practice and objects were distinct to the group of individuals (Bloor & Dawson,1994). These codes were formed through conscious schemas that were developed through learning in the education environment and occupational socialization within the work environment (and often a combination of both), as well as unconscious schemas which predisposed an individual to behave in a specific manner (ibid). Benner (1984) also acknowledged how knowledge, experience and personal traits influenced the development of the practitioner.

Professional socialization was fundamental to the creation of occupational sub-cultures within organizations as this was argued to be where individuals acquired values, attitudes, skills and knowledge attributed to a group that they sought to become a member of and be associated with (Clouder, 2003). Whilst Bloor and Dawson (1994) tried to separate the educational environment from the work environment with regards to occupational socialization, Hall (2005) argued that professional identity (and therefore socialization) was initiated during the training period, therefore solidifying the professional's world view and cultural traditions. Occupational culture was reinforced by the passing on of the attitudes, customs, behaviours, values and beliefs to the neophytes during the training period (ibid). The literature suggested that education and training had a very important influence over the creation and maintenance of occupational cultures and thus, in the author's opinion, educational providers could be a key partner for influencing change in values and attitudes held by individuals within an occupational community.

The codes and unique socially valued, specific knowledge, skills and behaviour fostered a group cohesion through the sharing of distinct ideologies, values, beliefs, norms and interpretations; thereby defining the specific criteria for professionalism and creating an occupational culture (Evans, 2008; Van Mook *et al.,* 2009). The distinction between professionalism and occupational culture was difficult to unravel even though the concept of professionalism goes as far back as Hippocrates (Evans, 2008). However, it was suggested that, where occupational culture was attitudinal and collective, professionalism was more focused on the individual; thereby suggesting that occupational culture defined the behaviours of professionalism (Hall, 2005). This would suggest that the collective occupational culture shaped individual professionalism through the requirement of conformity to the norm. However, Abramm (1992), cited by Clouder (2003), argued that compliance, rather than conformity, was a better description of professional behaviour (professionalism) due to the willingness of an individual to be moulded and shaped by the occupational collective. What was agreed was that the concept of professionalism meant different things to different people and that it was a contextual social construct influenced by

internal (personality traits) and external factors (socialization) (Evans, 2008; Van Mook *et al.,* 2009).

Practitioners often articulate and draw on discrete elements of their professional mantle such as altruism, autonomy, integrity, accountability, duty and ethical and moral standards to justify their areas of control (Bloor & Dawson, 1994; Evans, 2008). This was evident amongst the medical, nursing and allied health professionals when setting minimum professional occupational threshold standards and was the basis for creating a platform of power (Baker, 2006). Through the creation and maintenance of professional cultures, groups of individuals sought to control their organizational destinies by drawing on their skills and codes to highlight that they had specific areas of knowledge and expertise which others lacked and thus legitimize their dominance (opcit). Occupational culture provided a group of individuals with power and control through the creation of an occupational monopoly achieved by clinical competence thresholds; the desire to maintain this position of power created an environment for resistance and professional protectionism to thrive (Hall, 2005).

2.6.2.b Professional Power

Professional dominance in health care was first established by the medical profession, coming to a peak in the 19th century and to a lesser extent still exists today (Nancarrow & Borthwick, 2005). The position of power in the medical profession was substantiated by various factors: those being university education that was limited to the wealthy classes and, certainly up to the mid 20th century, university education was limited to the male gender thus creating a power position through patriarchy (Witz (1992) cited by Ferris, 2005); the development of professional associations provided a powerful political voice and the instigation of regulation and licensure increased occupational closure; all of which placed the medical profession in an elitist position (Nancarrow & Borthwick, 2005). Doctors derived their power from the value society placed on their medical knowledge and occupational closure (Allsop, 2006; Currie, Finn & Martin, 2009).

Weber (1968) cited by Bloor and Dawson (1994) supported suggestions that the formation of closed social structures by professional communities is a type of patrimonialist dominance; a form of authority that was rooted in tradition and maintained by historical cultures seen within occupational groups. Weber's explanation of the concept of social closure was unidirectional suggesting that individuals at the top of the hierarchy could exclude individuals below thus preserving advantages such as income and authority. This concept was evident in the early years of the medical profession where technology and knowledge were withheld from other health occupations and, more recently, in the latter part of the last century in radiology whereby the radiologists withheld reporting, ultrasound, fluoroscopy and cross-sectional imaging from radiographers (Ferris, 2005). Social closure by the medical profession enhanced the profession's workplace authority and status providing them with a monopoly and power to have jurisdiction over the development and scope of other health practitioners such as nursing, midwifery and professions allied to medicine (Currie, Finn & Martin, 2009; Nancarrow & Borthwick, 2005). A clear hierarchy of occupations was formulated by the medical profession thus preserving its dominance in the field of health care provision (Ferris, 2005).

Weber's social stratification theory (whilst still cited today) was challenged by many social theorists due to it only considering a downward direction of the use of power. Nancarrow and Borthwick (2005) citing work by Kanter (1977) (and later Tomaskovic and Devey (1993)) argued that power was not unidirectional as it could also be used in an upward direction. This upward use of power was referred to as *usurpation*. Here the use of power was to gain a greater share of the resources which were controlled by the dominant group. *Usurpers* were suggested to be more likely found in a specific group of advanced practitioners with higher level skills rather than in the leadership role found in the medical profession. This *usurpation* had been evident particularly in the role expansion of nurses and radiographers over the last decade whereby increasingly those practitioners were undertaking roles previously in the medical domain (Ferris, 2005; Currie, Finn & Martin, 2009)

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Kronus (1976) and Larkin (1982), cited by Nancarrow and Borthwick (2005), identified a similar concept to *usurpation* called *occupational imperialism*, whereby occupational groups advanced their status through the acquisition of high status skills and roles poached or delegated from other professional groups, often higher up in the occupational cultural hierarchy. However, in contrast to *usurpation,* for *occupational imperialism* to exist it was suggested that the occupational groups seeking to maintain a higher position in the hierarchy had to delegate lower status skills to subordinates. The delegation of tasks (role extension) previously undertaken by higher professional groups was often referred to as *vertical substitution* and was argued to be evident within clinical competence frameworks; the extent of role extension in *vertical substitution* was controlled by the more powerful occupations, thereby determining the scope and development of the subordinate groups (Larkin, 1993).

Vertical substitution or *occupational imperialism* could be argued to be evident within the radiology culture at many levels: firstly, radiologists expanded their skills into more interventional radiology, thus improving their power status amongst surgeons whilst delegating what they saw as lower status skills such as reporting, and fluoroscopy examinations to the radiographers: radiographers, in-order to undertake those traditional radiologist clinical skills, delegated general radiography skills to assistant radiographic practitioners and thus increased their power status both above and below their occupational level (Ferris, 2005).   The creation of assistant radiographic practitioners within the radiography hierarchy could be argued to have been a temporary solution to a workforce deficit within radiography and most of these have since upskilled to become registered practitioners (SCoR, 2008), thereby making *vertical substitution* redundant. In the author's opinion, the elitist position within radiography that reporting radiographers secured through *occupational imperialism* was still strong today. The extent of role extension and delegation was continually under the control of the radiologist who was at the pinnacle of the professional power hierarchy within radiology (Larkin, 1983).

However, the author suggests that *vertical substitution* or *occupational imperialism* was not fully mirrored in sonography. Even though radiographers were facilitated by the radiologist to expand their role by the acquisition of high level skills required to undertake ultrasound examinations, the sonographers, as they expanded their imaging role failed to delegate lower status skills to subordinates. This lack of delegation of tasks from professionals to subordinates was suggested to be due to the perception that it devalued their skills and knowledge (Ferris, 2005). The lack of delegation of lower (dirty) tasks to subordinates could be argued to be a form of occupational protectionism. The maintenance of value, and thereby lack of delegation by the sonography community, in the author's opinion did not exhibit power through *vertical substitution* and *occupational imperialism* but through *usurpation* and specialist status.

Specialism as a concept was poorly defined and understood with very little exploration within the literature. However, it was generally agreed that specialism was where a select occupational group acquired an increased level of expertise in a specific disciplinary area and that this practice was often associated with a specific professional title (Nancarrow & Borthwick, 2005). Ferris (2009) argued that specialism originated in exclusive and restricted practice; which would suggest that specialism was a form of social closure that created a position of power within the occupational community, thus creating a further sub-culture. Within occupational communities such as radiography, podiatry, physiotherapy and midwifery the sub-culture of sonography had emerged through their specialization in the use of ultrasound as a diagnostic imaging tool. This position of power through specialization was further supported by Bloor and Dawson (1994) who argued that sub-cultures, like sonography, could often emerge stronger and more powerful than other groups within the occupational culture (radiographers and midwives) due to the strong associations with other powerful professional peers; often achieved by the delegation of the specialist roles from those more powerful professional groups (Radiologists, Surgeons and Obstetricians).

Specialism was often defined as the undertaking of an increasing level of expertise in a specific field and yet it was argued that specialism and expertise were not synonymous even though the terms were used interchangeably within the literature (Donaghy & Gosling, 1999).   This divide between specialism and expertise may be due to formal and informal recognition of specialist practice that occurred within health care practice. Practitioners who informally regarded themselves as specialist through additional training were argued to be experts in an area of their work rather than specialists; few had recognition outside of their occupational community by reward/remuneration or protection that a formally recognized specialism attained (Nancarrow & Borthwick, 2005).

Sonography, although currently without national recognition or protection as a professional title, did have recognition from employers; being generally remunerated at a higher banding of Advanced and Consultant practice (although due to the multi-professional nature of the occupational group there were inconsistencies nationally with grading within sonography) and from other medical professional groups. Therefore, in the author's opinion, sonography did have formal recognition of being a specialism. Furthermore, Ferris (2009) suggested that there were four characteristics defining specialist practice being: full time commitment, capacity for the practice to divide, practice that was challenging and had clinical autonomy and practice that required additional training and education. It can be argued that the practice of sonography possesses all the characteristics and thereby supports the claim that sonography was a specialism, which in turn, through social closure, placed the occupational community in a position of power.

Nancarrow and Borthwick (2005) argued that the subtle differences between *vertical substitution* and specialism were problematic but the main categorization was that *vertical substitution* occurred across professional boundaries whereas specialization occurred within a profession. With the unique characteristics of an occupational community that included individuals from several different professional backgrounds it was challenging to determine how sonography, as a subculture, had achieved its place on the professional hierarchy. Was it initially created through *vertical substitution* from the

radiologists to the radiographers which had now evolved into a specialism across different professional groups due to increasing service demands?

Beales, Walji and Papoushek (2011) argued that professional power and control was directly related to the value placed on a skill set and this value could be determined by the demand for these skills. The higher the demand for the skills of a closed occupational group the greater their position of power to control, influence, instigate and/or resist change and development within the organization. The demand for skills and knowledge created a position of economic, political and professional power (Allsop, 2006). Professional power and control created from an imbalance in demand and supply and occupational monopoly provided safety to the occupational community and thus created a platform for professional protectionism to grow (Nancarrow & Borthwick, 2005).

2.6.2.c Professional Protectionism

Professional culture, and ultimately identity, maintained jurisdiction and demarcation of occupational practice which were instrumental in occupational ring fencing and protectionism due to the fear of losing that exclusive professional identity (Bate, 2000; Timmons & East, 2011). The demarcation of boundaries of practice was argued to foster and enhance territoriality between health professions and thus exacerbate professional protectionism (Bate, 2000). Professional protectionism through the mechanism of social closure was where practitioners sought to safeguard their knowledge and exert control over their specific work practices to preserve their professional and social status (Morgan, 2014).

Bate (2000) argued that every profession regarded itself as elite. This professional elitism was further enhanced by the credentialing or licensure of practice undertaken by professional regulatory bodies (Morgan, 2014); the determination of threshold clinical competences that must be met by individuals wishing to enter the profession was arguably an exertion of authority over who was eligible to practice (Morgan, 2014). This restriction to be a member of the profession was certainly evident within radiography with statutory law restricting practice to only those who had the appropriate qualifications. However, the

practice of ultrasound was not closed to professionals through licensure or registration, leaving education and level of qualification the only options to ensure exclusivity and social closure to safeguard its occupational status. When considering the issue of non-closure of sonography through the lack of requirement for registration and licensure that other medical professions had at their disposal, it could be argued that it posed a great threat to sonographers with regards to the safeguarding of occupational territory and thus exacerbated protectionism amongst the sonographer community (Morgan, 2014).

Protecting an occupational group from encroachment on its practice required it to be able to articulate the skills, knowledge and attributes that made it unique, thus creating a professional identity. Professional identity was often articulated in clinical competence standards or standards of proficiency, which provided occupational protection through social closure (Nancarrow & Borthwick, 2005). Currie, Finn and Martin, (2009) also argued that, to protect against encroachment from other occupational groups, it was also necessary to be able to identify lower skilled tasks, that could be assigned to other health care professionals, to facilitate continual upward growth and development of the clinical skills. Thereby, it is suggested that lack of delegation of lower skill tasks performed by a specific occupational group did not actually protect the profession but restricted it and thereby made it more vulnerable to encroachment. The double-edged sword of protecting occupational standing through closure and delegating lower skill tasks (commonly termed as dirty tasks) to subordinates in-order for the practice to grow had (for some professional groups such as doctors, occupational therapists and sonographers) been challenging due to the perceptions that delegation would devalue their practice (Currie, Finn & Martin, 2009, Nancarrow & Borthwick, 2005).

Workforce deficit challenges was argued to be a significant driver for major shifts in delegation of the so called "*dirty tasks*" from one occupational group to another; this was evident in Radiology with a shortage of radiologists initiating the delegation of some clinical skills to radiographers such as reporting (Ferris, 2009; Woodford, 2005). Delegation had also been seen in medicine where

nurses had started to undertake some tasks historically undertaken by doctors and, more recently, with the advent of the physicians' associate/assistant grade. Government policies had also been instrumental in breaking down barriers created by professional traditions. The Department of Health's NHS Plan (2002) included a subtitle of "More Staff Working Differently" which outlined the need to redistribute professional jurisdiction to facilitate a more flexible and multi-skilled workforce. However, this did not go unchallenged, with the medical hierarchy perceiving this as potentially de-skilling the medical profession (Currie, Finn & Martin, 2009). To reduce the resistance to the changes in practice the doctors were actively involved in the determination of the skills and job profiles of the professional groups who would be up-skilled thus maintaining their position of authority. This behaviour of controlling how tasks were delegated and what remuneration was assigned to the undertaking of these tasks was arguably professional protectionism; ensuring that the tasks delegated were given sufficient recognition and thereby not devaluing their historical role (Currie, Finn & Martin, 2009; Ferris, 2005).

It was evident from the literature that professional protectionism was rife within the health service and that it was underpinned by affiliation to professional identity, professional culture and the need to maintain status within the organizational culture and society. Professional protectionism was directly connected to the fear and anxiety of not being valued by society and the organization as well as jealousy of the value placed on other professions (Bate, 2000; Bloor & Dawson, 1994; Morgan, 2014; Ward, 2006).

2.6.2.d Implementing change

Professional protectionism or resistance was present across a range of health care professions especially where changes in workforce practices were being advocated (Henderson *et al.,* 2015). The resistance was often associated with fear, anxiety, jealousy and perceived loss of value (Descombre *et al.*, 2006; Ward, 2006). Different interests, values and professional cultures could militate groups against change due to the perceived challenges to, and dilution of, their occupational identity and sphere of exclusive practice that were directly linked to their hierarchal status within the organization (Ward, 2006). It was argued

that long standing traditions and clearly demarcated occupational boundaries found within professional competence standards and frameworks, along with strong professional associations with influential professions could make implementing change difficult (Bloor & Dawson, 1994; Descombre *et al.,* 2006).

It was argued that, in times of change, where cultural values and beliefs were challenged, professional subcultures might resort to legitimizing their practice by articulating and enhancing their values, ethics and codes of conduct. This would undermine the conflicting arguments for change and maintain a position of control (Bloor & Dawson, 1994).   Davies, Nutley and Mannion (2000) suggested that, during a time of cultural change (professional or organizational), there should be a balance between continuity and renewal; aiming to negotiate what practice should be maintained and reinforced and what needed to be reviewed. Leadership, not enforcement from the top down (often seen in the health service), was imperative for success; the needs, fears and motivations of the occupational community needed to be considered to minimize the barriers and hierarchical dominance created by professional protectionism (Davies, Nutley & Mannion, 2000; Hall, 2005).

2:7 Literature Review Conclusion

The concept of competence, whilst poorly defined with some confusion of the terms, competency, competence and competent within the literature, reflected a professional preoccupation to define and measure clinical competence (Cowan *et al.*, 2007). The appropriateness of clinical competence to define anything other than newly qualified graduate practice was debated with the need to articulate a capability framework for higher levels of performance being suggested. The discrepancies in frameworks across health care were seen to be divisive and added confusion to the expectations of practice for different levels. Ultrasound in the UK (at the time of writing) had no regulatory body with no requirement for licensure to practice. This contrasted with Australia, New Zealand, Canada and America where sonography was a recognized profession and had defined standards of clinical competence from graduate to advanced practice.

There was evidence that clinical competence thresholds were used to define occupational practice and that, by doing so, occupational monopoly and power base was firmly established. Changes to competence frameworks in order to delegate skills/tasks to lower level practitioners were perceived as de-skilling and devaluing the occupational group which resulted in resistance to any proposed changes in practice (Cowan *et al.*, 2007; Hall, 2005). Occupational power and attitudes were challenging in times of change and, whilst providing a perceived position of safety, could also inhibit development and change if not managed appropriately (Descombre *et al.,* 2006). Hall (2005) argued that leadership was crucial in times of change; the needs, fears and motivations of the occupational community needed to be considered to minimize the barriers and hierarchical dominance created by professional protectionism.

The author found that the literature reviewed in phase one of the study indicated that there was a gap in knowledge concerning the sonographer perspective with regards to defining clinical competence and sonographer characteristics from graduate to consultant practice. The lack of a UK discrete complete clinical competence framework to illustrate sonographer career and professional practice development was evident from the literature and professional documents reviewed. Therefore, the author found that there was a clear justification to explore sonographer perceptions of clinical competences and the professional characteristics from graduate to consultant practitioner. Furthermore, even though a plethora of clinical competence frameworks were identified, sonography did not have a framework of professional standards that articulated minimum threshold clinical competences required for registration to practice. This is argued to indicate a need to explore the sonographer opinion as to the effectiveness and appropriateness of the frameworks used at that time to map sonographer practice.

The literature review that supported phase two of the study contextualized the world of the health professional by exploring organizational and occupational culture within health services, professional identity, power, specialism and protectionism. It was acknowledged within an overarching organizational

culture there were co-existing sub-cultures created by different occupational or professional groups, which sought to differentiate themselves from one another by their own specific cultural values and artefacts (Bloor & Dawson, 1994; Davies, Nutley & Mannion, 2000). Occupational cultures, through social closure, exhibited power and control by the creation of an occupational monopoly. This monopoly was maintained through the development of minimum professional clinical competence standards (Bloor & Dawson, 1994). By doing this they became an exclusive group of individuals, a profession (Larkin, 1983; Witz, 1992). Whilst, at the time of writing, sonography had yet to be recognized as a profession it could be argued that sonography was an occupational community that demonstrated all the characteristics of a profession outlined in the literature.

Occupational monopoly, social closure and the increased demand for skills and knowledge created a position of economic, political and professional power (Allsop, 2006). Professional power and control, created by an imbalance in demand and supply, and occupational monopoly provided a sense of safety for the occupational community and thus created a platform for professional protectionism to grow (Nancarrow & Borthwick, 2005). Furthermore, the demarcation of boundaries of practice through the articulation of clinical competence standards fostered and enhanced territoriality between health professions, thus encouraging professional protectionism (Bate, 2000). It was clear from the literature that there was a strong link between the articulation of clinical competences, professional culture and identity which were highly valued providing status and protection from encroachment.

The literature reviewed concerning culture, professionalism and professional identity, whilst contextualized to the health service environment, indicated a lack of exploration of the concepts within the occupational subgroup of sonography. Radiography, midwifery, nursing and medicine had all been cited within the literature with no acknowledgement of sonography as an occupational group. The exploration of sonographer opinion on their working world potentially could provide new knowledge concerning the sonographer culture, professional identity and professionalism; this in turn could lead to new insights in phase two

of the study into the extent attitudes and opinions are influenced by occupational culture. Furthermore, there was some doubt created within the literature as to whether *occupational imperialism* through *vertical substitution* or *usurpation* through specialism was the process by which sonographers gained their status. The exploration of sonographer opinion, values and beliefs concerning how they perceived sonography within the organization (in phase two of the study) would provide a deeper understanding of the culture of sonography that could potentially be useful for workforce planners and educators who propose change to existing and established practice.

2:8 Research Questions

This project was undertaken in two phases in order to answer the overarching research question

> **"What are the individual attitudes and opinions of sonographers towards the role of the graduate sonographer?"**

Phase1: explored the individual attitudes and opinions of sonographer towards the role of the graduate sonographer by investigating

- What the participant understood about clinical competence?
- What the participants thought would be the competence characteristics from graduate to consultant sonographer?

Phase 2: explored the occupational culture of sonography through the sonographers' perceptions of their working world?

- To what extent did the culture of sonography influence the participants' attitudes and opinions towards career and educational development, with particular emphasis on the development and implementation of a graduate sonographer?

2.9 Summary of Chapter 2

Phase 1 review of the literature explored the concepts of clinical competence and capability; the evaluation and critique of them against levels of practice suggested that the articulation of clinical competence was only appropriate for graduate practitioners. More advanced levels of practice were argued to be better defined by capability which was a more complex phenomenon to articulate and assess.

Phase 2 review of the literature explored the relationship between occupational culture, identity, power and protectionism and how influential the articulation of clinical competence and roles were in maintaining a position of power. Power was inextricably linked to value and demand placed on the skills of an occupational group. The perceived loss of value or demand for these skills could increase fear and anxiety within the occupational group which was often displayed as resistant behaviour. Usurpation was identified as a possible reason why sonographers were resistant to changes to their clinical and career frameworks

Due to the multi-professional nature of sonography, as an occupational group, there appeared to be a plethora of frameworks used in the UK to define ultrasound roles and competence which had led to an inconsistency of remuneration.   The USA, Canada, Australia and New Zealand had sonography specific frameworks but notably were recognized as a registered professional group.

It was evident from the literature that within the culture of health care providers there was a consistent need to have practice valued and this practice was protected through the articulation and implementation of clinical competence frameworks. Value was linked to a hierarchy of power and influence within the organization. It had been argued that powerful occupational groups were resistant to change due to the fear of devaluing their clinical practice rather than considering change as a catalyst for developing skills and evolving their roles.

Chapter Three

Methodology

Whilst initially the project was intended to only have one round of interviews, after initial analysis of the early interviews, the emerging complexities, entwined within the attitudes and opinions of the participants indicated a need for a methodological change to more fully answer the research question. The initial phase explored the participants' attitudes and opinions towards the role and implementation of graduate sonographers. The rationale for phase one was to generate data that could potentially be used to help identify clinical competences which would define the role of a graduate sonographer. This new knowledge could potentially inform the design of an appropriate undergraduate sonography education programme.

The emerging data from phase one indicated an overall resistance from the participants to identify clinical competences and define the role for a graduate sonographer; an emerging shift in the direction of focus for the study suggested the need to undertake the second phase. Phase two of the study explored the opinions and perceptions of the participants concerning their current working world and how these may have influenced behaviour and attitudes towards the implementation of the graduate sonographer.

The findings of this study, through the researcher's interpretation of the participant's attitudes, opinions, values and anxieties concerning the implementation of a graduate sonographer and the existing culture of sonography may facilitate a more collaborative and inclusive approach toward implementing change to sonography education and career structure which would be useful to:

- Health Education England workforce planning
- Professional bodies
- Higher Education Institutes
- Managers of ultrasound services

The theoretical drive of this study was from a qualitative perspective. The core components were to explore, describe and interpret the attitudes and opinions of a sample of practicing sonographers towards the introduction of graduate sonographers to the workforce structure. The exploration and interpretation of the attitudes and opinions held by the participant sonographers enabled the researcher to explore in-depth to what extent the occupational culture of these practicing sonographers was influential in determining the collective behaviour towards implementing this change.

An inductive approach to data capture and analysis was undertaken in two phases: phase 1 enabled the initial capture of the participant's understanding of clinical competence and their opinions as to what clinical competences defined each level of practice from graduate to consultant sonographer; phase two enabled the construction of new interpretations of the culture of sonography seen through the eyes of the participants which provided context to the attitudes, values and beliefs held by the participant sonographers. This chapter will examine the qualitative methodology and philosophical stance relevant to this research. The method employed in this research and its methodological underpinning will also be discussed.

3.1 Qualitative Methodology

Qualitative enquiry, as a method, was argued to be firmly embedded in health and social care research, being first utilised in the early 1950's (DePoy & Gitlin, 2016). Qualitative research had faced much criticism concerning rigour and reliability from the positivist fraternity, being argued to be unscientific, resulting in subjective and explorative research (Murphy & Yielder, 2009). Unlike the empiricist ideology that underpinned quantitative research, qualitative enquiry did not accept that there was one objective truth, suggesting that there were many truths and thereby embraced, rather than refuted, the subjectivity created by interpretation (Cohen *et al.*, 2007; Murphy & Yielder, 2009). However, even though qualitative research continued to be challenged, it experienced a rise in its popularity and critical standing within the health sciences due to its ability to

explore processes and meanings that could not be examined or measured by a quantitative methodology (Denzin & Lincoln, 2011). This was supported by the findings within the review of the literature whereby all research reviewed adopted qualitative methodology; thus, it is argued by the author that the exploration into sonographer's values and opinions, which could not be quantified, required a qualitative approach to the gathering of the data and analysis of the findings.

It was suggested that qualitative enquiry was difficult to clearly define due to not having its own underpinning theoretical paradigm or distinct methods of practice, unlike quantitative enquiry (Denzin & Lincoln, 2011). Theoretical paradigms such as constructivism, feminism and Marxism all claimed the use of qualitative research methodology. Furthermore, qualitative researchers used narrative, content, discourse analysis and statistics as well as using approaches, methods and techniques from ethnomethodology, phenomenology, hermeneutics, deconstructivism, ethnographies, interviews and observations, all of which created a complex and confusing picture of qualitative research (ibid). The complexity of qualitative research was evident in the findings of the literature review (chapter two) with many different approaches being used. It was therefore imperative that the author provided clarity concerning the ontological and epistemological approach used in this research project

It was agreed that the purpose of qualitative research was to make sense of, or interpret, the world in terms of the meanings people attach to their experiences, thereby making their world visible to the researcher (Denzin & Lincoln, 2011). This suggested that qualitative research was an interpretive approach to exploring the world; therefore, supporting the author's opinion that a qualitative approach was appropriate for this study as it aimed to interpret opinions, attitudes and values of the participants towards graduate sonographers and their experiences of the working world of sonography.

Qualitative enquiry was argued to be a situated activity that placed the researcher in the centre of the study, often becoming the research instrument,

and required them to use a range of interpretive practices; piecing the individual meanings together to achieve a more in-depth understanding (Murphy & Yielder, 2009). The intimate relationship between the researcher and research project was argued to be influential as to how the research was staged (opcit). The suggestion that the narrative of the researcher was developed within a particular research paradigm reinforced how essential it was that the researcher was clear about the ontological and epistemological stance of the project as this would define the methodological approach. Denzin and Lincoln, (2011) stated that all research (irrespective of being either quantitative or qualitative) was guided by the researcher's beliefs and feelings of how the world should be interpreted, understood and studied.

3.2 Philosophical Stance

Philosophical questioning of what we know about the world within which we exist (ontology) and how we know that this is true (epistemology) has a significant influence over the design and methods chosen in any research project (Moses & Knutson, 2012); thereby it was imperative that the researcher had an awareness of their own epistemological position as this underpinned the entire research process. Crotty (1998) suggested that, conceptually, ontology and epistemology were difficult to separate (being mutually dependent) and that an ontology was associated with a specific epistemology.

3.2.1 Epistemology

The central concern of epistemology is to provide an analysis of the concept of knowledge (Cardinal *et al.,* 2004) and thereby answer the question of *How do we know what we know?* Knowledge was argued to be fundamental to a researcher's life; to know something means to have a belief that the knowledge was trustworthy and could be justified by reasonable evidence (Audi, 2011; Pascale, 2011). Epistemology is a vast and confusing subject in which there are a variety of different approaches to knowing and, as a researcher affiliating to one epistemology in this project, was particularly challenging. The main sources of knowledge debated in philosophy come from two endpoints of a continuum

with naturalist (empiricist) at one end and constructivist (experience or reason) at the opposite end (Moses & Knutson, 2012).

Empiricism assumes there is a *real world* independent of our experience of it. Knowledge of this *real world* is gained by sensual perception such as observing and direct experience which is followed by thinking about and recording these experiences to reveal patterns that exist in nature (Pascale, 2011). Positivism, behaviourism and empiricism are terms used to explain the same methodological position that is collectively known as naturalism (Moses & Knutson, 2012). A naturalist seeks to discover and explain patterns that are assumed to exist in nature (Pascale, 2011). Hume (1711-1776) expanded further by stating that empiricism was based on facts about the observable world, a single truth, and was the basis of science. Naturalist scientists seek to observe and analyse events to make predictions or associations in the future.

Experimental design is at the core of the preferred methods used by contemporary naturalists closely followed by statistical approaches, and comparative studies; these methods allow the researcher to control and compare relevant variables thereby producing robust knowledge that can facilitate the process of prediction of causal relationships (Moses & Knutson, 2012). However, most of the methods used by a naturalist do not consider the context from which the information is drawn. The exclusion of context is a real concern for normative studies such as this, being at odds with the constructivist standpoint of this research. A constructivist's objective is to interpret and understand the phenomena not to provide predictions and therefore it was the author's opinion that using an empirical naturalist approach for this project was not justified.

A constructivist paradigm within a relativist ontology was the position of this research. This approach supported the researcher's perception that the patterns studied to create knowledge were not determined by nature but were the product of individual construction; each participant sonographer created their own understanding of the world through beliefs, values and opinions;

which in turn created multiple realities; there was no one truth to be known (Moses & Knutson, 2012; Murphy & Yielder, 2009).

Unlike empiricists, constructivists argued that the world was not experienced objectively (as it is) but that individuals created subjective perceptions of this world. Individual characteristics such as age, gender, history, culture, language and era created different contexts that facilitated or obscured a given perspective of the world (Whewell, 1996:1840). These contexts were what provided insight and meaning as to what was known about the world. This subjectivist methodological stance recognized the role of the researcher and the participant in the co-construction of an impression of the meaning of the world as they perceived it. The researcher was not independent from the research (Moses & Knutson, 2012); researcher values should be self-acknowledged in the process of constructing meaning from the participants' narratives and therefore it was the intention of the author to be reflexive throughout the undertaking of the research project. For constructivists, how knowledge was gained about the world was complex and created many challenges.

3.2.2: A Theoretical perspective

It was noted by the researcher that ontological and epistemological stances had many theoretical perspectives. The theoretical lens of Interpretivism was suggested to create meaning out of the subjective world of human experience (Cohen *et al.,* 2007). An interpretive theoretical perspective did not provide an exact picture of the world but an impression of what the world looked like as the researcher and participants saw it; taking individual meanings of the world and reconstructing them to create a new understanding. Contextualisation was an important consideration when constructing new meanings as this could influence the process and outcome of the interpretations (Cardinal *et al.,* 2004; Golhkuhl, 2012). It was suggested that behaviour and data were socially situated, thereby context related and context dependent. To fully understand a situation, researchers needed to understand the context as this could heavily influence the behaviour and perspective of the participants (Cohen *et al.,* 2007); thus, justifying the study being undertaken in two phases (phase one to understand the participants opinions and attitudes towards graduate

sonographers and phase two to understand the context in which these beliefs, values and attitudes were rooted). As a researcher, who had personal experience of the world of sonography, contextualisation of the interpretations of the participants was possible and enabled a greater depth of understanding of the data generated.

In interpretive research the relationship between the participant and researcher is crucial to ensure that the data generated is trustworthy and meaningful (Cohen *et al.,* 2007; Goldkuhl, 2012; Murphy & Yielder, 2009). Due to the close researcher/participant relationship, the researcher was placed at the heart of the data generation and analysis; it was imperative that the researcher was reflexive and aware of how their opinions and experiences may have impacted on the research. The researcher kept a comprehensive research diary throughout the process to encourage reflexivity at all stages of the research process thereby enhancing the reliability and trustworthiness of the research findings (the role of the research diaries will be discussed later in Chapter 6).

Phase one of the study sought to capture the participant sonographer's opinion and attitudes concerning the introduction of a graduate sonographer in addition to the, already existing, advanced and consultant practitioner grades. After six interviews (during which comparisons were made at the time of transcription) it became evident that the participant's attitudes were collectively negative toward the concept of a graduate sonographer. The researcher identified the need to contextualise the participant's responses in order to gain a deeper understanding of the data being gathered and therefore phase two of the study explored the values, beliefs and opinions of the participants concerning their working world of sonography. Due to the multiprofessional nature of the sonography workforce it was the author's belief that several perspectives existed and thereby multiple realities underpinned each participant's construct of clinical competence and the working world of sonography. The interpretation of these multiple realities provided insights as to how these perceptions and attitudes towards the graduate sonographer grade were formed and why they were held.

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It is acknowledged that the researcher brought both an educational perspective as well as sonographic practice knowledge and experience to the research. Through the interpretation of the participants' values and opinions towards the graduate sonographer grade the researcher constructed rich understandings about their perceptions concerning the occupational culture of sonography and the influence this might have when implementing change.

3.2.3 Methodology: Qualitative interviews and Critical Theory

Within qualitative research there are four commonly used research designs; ethnography, grounded theory, case studies and phenomenological studies, however this research, although qualitative using interviewing for data collection, did not subscribe to these defined methodologies (Denzin & Lincoln, 2013). By exploring and interpreting the attitudes, values, beliefs and opinions of a sample of sonographers towards the graduate sonographer role and their working world, the researcher, sought to see the world of sonography through their eyes. The interpretation of the participant sonographers' opinion with regards to graduate sonographers in relation to clinical competence, role definition, career frameworks and the current landscape of ultrasound practice and service delivery facilitated a new understanding of the culture of sonography and its influence (not explored in the literature previously) through the participants' eyes.

Qualitative interviews, as a distinct research method, could be argued to provide the researcher with thick descriptions that could facilitate the exploration of complex relationships, patterns and theories (Cohen *et al.,* 2007). The researcher believed that this research approach, employed within a critical theory framework, would construct new understandings concerning the culture of sonography and its influence over participant sonographer's attitudes and opinions; thereby empowering not only those who sought to bring about change but those who were being asked to change (Cohen *et al.,* 2007; DePoy & Gitlin, 2016).

Critical theory originated from a group of German scholars known collectively as the Frankfurt School and was founded in the 1920's. It was debated whether

critical theory was indeed a research methodology or rather a philosophy (world view) that's purpose was to understand human behaviour and bring about change (DePoy & Gitlin, 2016; Ferris, 2005). Critical theorists used language to discover multiple meanings that exposed a complex and pluralistic world view. It was the researcher's opinion that the exploration of the participant sonographers' perceptions, values and attitudes concerning the introduction of a graduate sonographer would provide deeper understanding concerning the culture of sonography and, through this understanding, empower the occupational community to move forward and own its destiny.

The overarching philosophy of this study, as previously indicated, was a constructivist interpretive paradigm working within a relativist ontology, which supported the use of a qualitative interview method that facilitated the exploration of multiple constructed realities. Furthermore, it was noted that these individual realities were also influenced by a complex mix of social and contextual influences providing thick descriptions and insights (Cardinal *et al.,* 2004).

The underpinning knowledge generated from the review of the literature (phase one and two) was critiqued and deconstructed prior to the interviews for each phase, informing the interview process in keeping with critical theory methodology (Cohen *et al.,* 2007). A subjectivist epistemological stance enabled participant and researcher interpretations to be cross-referenced with the literature findings thereby enhancing the trustworthiness and rigour of the research findings.

The intention of the research was to use the new understanding within a critical theory framework thereby enhancing the potential of the research to empower the occupational group of sonography to lead change and enhance their future sustainability.

3.3 Method

This section will define the techniques and procedures employed to collect the data and its analysis. The methodological approach was the same for both phases of the project.

3.3.1 Research Ethics and Governance

Punch (2013) suggested that ethical accountability was the sole responsibility of the researcher and that the academic integrity and respect for all the stakeholders was paramount. Ethical adherence ensured that a research study would create no maleficence and promoted beneficence. The project was undertaken within the university's ethical governance framework. Approval to undertake the research was obtained from the university's ethics and research governance panels (appendix 8 – Ethical Approval Form DPS1 and appendix 9 – SHU Research Degrees Sub-Committee Ethical Approval DPS3).

NHS approval was not required as participants were identified from professional body registers, the Voluntary Register of Sonographers and through the research forum Linkedin. Interviews were not conducted on NHS property and were undertaken in the participant's personal time.

3.3.2 Ethical Issues

3.3.2.a Consent

All participants were invited to be individually interviewed by letter which included information that outlined the study's purpose, the interview process and a draft agenda for the interview. Each participant was required to sign a consent form that informed the participant that they had the right to withdraw from the study at any point (appendix 10 – invitation letter and appendix 11 - consent form). The consent forms were the only documents that enabled matching of participant to the interview data; for this purpose, the consent forms were kept in a locked compartment which could only be accessed by the researcher and will be appropriately destroyed after 10 years in line with Medical Research Council guidelines (https://www.mrc.ac.uk accessed Jan 2018)

3.3.2.b Confidentiality and anonymity

Participants were informed that their identity would be anonymised from the data and no reference to their employer would be made within the report. All audio recording and transcriptions from the interviews were anonymised using a coding system known only to the researcher. The digital recording was downloaded onto the researcher's computer and then wiped from the recorder. The researcher undertook the transcribing process to limit access to the raw data and therefore ensured confidentiality. The transcriptions were stored on a secure storage interface with access limited to the researcher.

3.3.2.c Risk Assessment

The researcher felt that the risk for the participants was minimal as the interviews were confidential, anonymous, and were undertaken in an environment that was agreed by both the interviewer and interviewee. Whilst the interviews explored some contentious issues none were deemed of a sensitive nature that would cause psychological harm. During the interviews, no upset or distress was observed and therefore minimal emotional risk to the participants was posed. The sample population did not include participants from vulnerable groups.

Due to the face to face interviews being conducted in a mutually agreed venue and the remaining interviews being held via the telephone no significant physical risk to the interviewer or participants was evident. All travel undertaken during data collection by the interviewer was during daylight hours and in personal transport. (appendix 8 – DPS1 Risk Assessment)

3.3.2.d Researcher/Participant relationship

When using interviewing as a method of data collection the notion of power status was argued to be significant being both a social and political interaction (Cohen *et al.,* 2007). It was argued that, because interview questions were designed by the interviewer and the interviewee answered them, the interviewee was essentially under scrutiny and therefore was ultimately subordinate to the interviewer; being especially evident in structured and semi-structured interview processes (ibid). Within a critical theory framework, as the

interviewer, the researcher needed to be aware of the potential power imbalance. Therefore, in-order to minimise this, the interviewees were provided with an overview of the topics for discussion during the interview. In contrast, it was also argued that the power imbalance could also be reversed, in that the interviewee could be placed in the position of power (Neal, 1995 as cited by Cohen *et al.,* 2007); this power reversal could be evident if a researcher was interviewing a person deemed to hold a position of authority or be renowned to have a significant knowledge base. In this project, the power reversal was not considered to be significant and would not contaminate the research findings.

The researcher/participant relationship within this study was deemed to be equitable and amongst peers; Cohen *et al.,* (2007) acknowledged that in this situation there was a potential to create challenges with regards to reciprocity and collaboration. However, the researcher argues that in this study the power base was always in favour of the interviewee as they decided to participate, to withhold or disclose information and to withdraw at any point.

3.3.3 Population and Sampling

Seidman (2013), Punch (2013) and Gray (2014) all agreed that the sampling and population strategy was an integral part of any research; be it either quantitative or qualitative. The sampling method and population must be consistent with the research strategy to ensure validity of the research findings. Indeed, DePoy and Gitlin (2016) argued that one of the most important decisions a researcher made was to determine who would be included in the sample population. Due to the narrow scope of this study the inclusion and exclusion criteria for the sample were easy to determine and apply (practicing, qualified sonographers, working in the UK).

Gray (2014) suggested that, overall, qualitative research usually involved purposive non-probability sampling. The researcher chose to use theoretical purposive sampling as this enabled the identification of a homogeneous group of participants who were most likely to provide relevant and detailed data. The following characteristics were used in the sampling strategy:

1. Qualified sonographers.
2. Currently practising in the UK.

Theoretical purposive sampling was suggested to be where individuals, having predefined characteristics, were selected deliberately to be participants in a study. Initially it was decided to restrict the sample population to include only consultant or lead sonographers as it was felt that they would provide a more holistic view (practice, management, leadership and development) of the world of sonography. However, after reflection, it was felt that by reducing the sample to this exclusive group of sonographers the multiple realities that existed within sonography would not be captured. Consultant and lead sonographers were, in the main, from a radiography background and thereby it was argued that to only include them in the sample population would have excluded opinions from not only other professions undertaking sonography but also advanced practitioner sonographers (who made up the largest proportion of sonographers) and those professionals engaged in education but still practiced sonography.

The researcher's previous knowledge of sonographers and their professional backgrounds, as demonstrated, influenced the researcher's decisions on the selection of the participants to be included in the study, but it was felt that this underpinning knowledge (rather than creating bias) enhanced the reliability and validity of the data gathered.

To capture data from a sample that reflected the population of sonography the researcher extended the theoretical sampling to include maximum variation; including participants from a large geographic area within the UK. However, during the review of the literature the researcher was made aware of a study undertaken in the North West that explored sonographer opinion concerning the future education of sonographers, and so, to avoid contamination of the data by potentially including some of the same participants, this area of the UK was excluded from the sample population. Sonographers from band 7 and 8, consultant and advanced practitioners, a locum, academics (who were practicing sonographers) and ultrasound managers were included in the sample so that a range of perspectives from different contexts could be captured.

Gender and age were not utilised in the sampling strategy as these were not deemed to have any significant influence, however, years of ultrasound practice were documented as this might have had a relationship to answers provided at interview.

The sample population was identified from the SCoR voluntary register of sonographers as well as the HCPC register of consultant sonographers. Furthermore, sonographers were also identified through the professional internet site LinkedIn. Band 8 advanced sonographer practitioners with managerial responsibilities were identified as being departmental leads. The proposed participants were initially invited by letter (appendix 10) to confirm an interest in participating in the study. A full outline of the study was provided in the letter as well as a consent form (appendix 11) that was signed and returned by all participants. On receipt of the consent form an interview date was agreed at a time convenient for both parties and preferred mode of interview (options were face-to-face, Skype or telephone). Participants were assigned a letter to ensure anonymity (appendix 12 for participant characteristics)

3.3.3a Sample size and saturation

Normally qualitative studies have relatively small sample sizes (Gray, 2014). There was no guidance in the literature as to what was an appropriate sample size other than it was dictated by the purpose of the study and practical constraints (Kvale, 1996; Punch, 2013). Seidman (2013) argued that there were two criteria to employ when deciding the sample size; sufficiency and saturation. Sufficiency ensured that the data retrieved was representative of the population not included in the sample. The researcher aimed to conduct 10 -15 individual semi-structured interviews on the population sample that reflected the composition of the UK sonographer workforce including a range of clinical experience and number of years practicing. However, Guest, Bunce and Johnson (2006) argued that predetermining the sample size was challenging as there were no published practical guidelines or tests of adequacy for the estimation of a sample size for purposively sampled interviews that would reach the required saturation. Instead, it was suggested that the size of a purposive

sample should be decided inductively (not predetermined) thereby sampling continues until "theoretical saturation" occurs.

Bowen (2008) and Guest *et al.,* (2006) also suggested that explicit guidelines or descriptions for determining how saturation in qualitative studies was achieved were relatively non-existent; causing novice researchers challenges when determining theoretical or data saturation had been reached. Murphy (2003) agreed, suggesting that the ambiguities with when, and how, saturation was achieved were endemic in qualitative research. At best saturation was suggested to be a balance between having a sample size big enough to maximise its potential to generate meaningful data, but not too big that there was too much data to analyse and interpret and not too small that it created the opportunity for overgeneralisations to be made (Denzin & Lincoln, 2013; Murphy, 2003).   It was suggested that grounded theory and ethnographic studies, in general, required much larger sample sizes (between 20 – 50 interviews) to achieve theoretical saturation due to the variance amongst the participants in comparison to studies that used a purposive, non-probabilistic, homogeneous sample, possessing a relevant degree of expertise in the field explored, where between 6 – 12 interviews were argued to be able to achieve saturation (Guest *et al.,* 2006). Hyde (2003), whilst agreeing that there was no guidance for determining saturation, advocated the need for researchers to be coherent and rigorous in determining how saturation was achieved.

Data saturation was argued to have occurred when the data being returned added nothing new and theoretical saturation occurred when no new insights or themes were identified (Charmaz, 2003). Bowen (2008) argued that when using theoretical sampling generalizations and representation of the population as a whole was not the study's aim (as in this study) and therefore less emphasis was placed on sample size but on sample adequacy. It is argued that the sample population of this study reflected the UK sonographer population (including a range of professional backgrounds commonly practicing and a range of roles found within ultrasound services) as well as the sample population possessed an expert knowledge of the research topic thereby defining it as an adequate sample.

Although Douglas (1985), as cited by Seidman (2013), suggested that saturation occurred when nothing new was being reported and usually occurred at 25 participants, the researcher felt that interviewing that number of participants would have made data extraction problematic, thereby avoided the risk of *drowning* in the data (Gray, 2014; Murphy, 2003). During the process of undertaking the semi-structured interviews the researcher transcribed each interview personally within two days after it was conducted; this approach enabled the comparison of the data as it was being gathered and thereby facilitated an inductive approach to determining the sample size. The analysis after the tenth interview indicated a *redundancy* of the data as no new concepts were being identified suggesting saturation at that point in time had been achieved.

3.3.4 Data Gathering

The data was gathered using semi- structured interviews that lasted on average 45 minutes. A time limit was not enforced as the researcher wanted the flexibility to explore unplanned concepts that emerged during the interview. This was deemed to be a valuable qualitative research tool that facilitated not only the capture of verbal data (transcription) but also non-verbal (comment notes) which increased the richness of the information received (Gray, 2014). Cohen *et al.*, (2007) suggested that although the interview situation could be (to a certain extent) a controlled event it also allowed for spontaneity and exploration of concepts which potentially could increase the depth of meaning from the data. However, the level of spontaneity was very much dependent on the interview approach.

Literature identified three distinct approaches to interviewing: structured, semi-structured and open/unstructured interview. Polgar and Thomas (2013) in their evaluation of different interview techniques compared the use of structured/ closed interviewing to that of questionnaires due to the inflexibility of the structure not facilitating clarification or exploration of deeper meaning. In contrast, whilst open unstructured interviews created an environment to explore

wider concepts it made the identification of themes more complex and was thus very time consuming.

Kvale and Brinkman (2009) suggested that a semi-structured approach to interviewing was most widely used in qualitative research due to it providing a focus that was investigated in all interviews but also facilitated flexibility to explore themes that emerged from individual interviews. Semi-structured interviews were argued to increase reliability and construct validity whilst permitting the researcher to explore certain responses in more depth, therefore providing greater insight into opinions, values and attitudes which could not be effectively captured by using a questionnaire (Cohen *et al.*, 2007; Denscombe, 2007; Murphy, 2003). Furthermore, the interviewing method also enabled the participants to seek clarification of the questions posed thus improving the quality of the data collected ensuring its relevance and accuracy. As the researcher was relatively inexperienced with undertaking interviews as a research method, it was felt that the semi-structured approach would ensure consistency across all of the interviews but at the same time offer the opportunity to explore issues not previously considered by the researcher.

To ensure that the non-verbal data such as body language was captured the interviews, where possible, were conducted "face- to-face" (6 participants), however four participants expressed a preference for telephone interviews and therefore the data was collected using a mixture of face-to-face and telephone interview techniques. None of the participants wanted to undertake the option of using Skype for the interview.

Patton (2015) argued that the interview process should be able to collect not only verbal data but non-verbal data such as body language, gestures, intonation and expressions that all added to the richness of the data and the accuracy of the researcher interpretations. Face-to-face interviews were argued to be the most effective technique as they provided the opportunity to collect the valuable non-verbal data that strengthened the validity of the researcher's interpretations (Kvale & Brinkman, 2009; Polgar & Thomas, 2013). It is acknowledged that although face-to face interviewing was deemed to be

the most effective method for undertaking interviews there were also negatives, such as interviewer and interviewee relationships, rapport and the reluctance of the interviewee to be open to disclosing sensitive information in this more intimate environment (Cohen *et el.,* 2007). Furthermore, travel, location and time resources were a factor when considering face-to-face interviews. The author allowed the participants to choose the method of interview, thereby reducing the risk of non-disclosure due to the participant feeling uncomfortable. At the beginning of the interview the author welcomed the participant and provided a brief overview of the content that the interview would explore and encouraged the participant to introduce themselves to create a relationship and positive rapport that would enhance the quality of the interview process and overcome any feelings of apprehension by the interviewees (Appendix 13-Sample of face-to face interview transcripts)

Telephone interviewing provided the opportunity for the study to include respondents from a wider geographic area without the resource implication of travel costs, time resource and risk assessment of the different locations. Silverman (2001) argued that telephone interviews often increased the uptake of participants due to the increased level of anonymity, which in a small profession such as ultrasound could be argued to have been favourable. However, only four of the participants opted for the telephone interview.

Whilst it was argued that telephone interviewing facilitated the researcher to access a wider participant pool this did not come without its challenges. The quality of the interview recording at times was affected due to the researcher having no control over the interviewee's environment and interruptions. Furthermore, background noise and strong accents did make transcribing the recorded interview more challenging: however, this was only an issue on two occasions. It was argued that, because telephone interviews lacked the sensory information gained from the face-to-face interviews, rich non-verbal data was not effectively captured making interpretations less reliable often becoming distorted (Cohen *et al.,* 2007; Murphy, 2003). To minimise the loss of non-verbal data the author made side notes on the transcripts to document voice intonation, laughter, pauses and sighs in-order to capture the mood of the

responses which facilitated a more accurate interpretation of the data collected. (appendix 14 – telephone transcription sample)

It was identified that the use of Skype could have overcome the loss of sensory information that was inherent with the telephone interviews; however, it was argued to still inhibit the development of the interviewer and interviewee relationship (Roulston, 2010). Interestingly no participants chose the option of Skype, this may have been due to availability of internet access or lack of experience with this method of communication.

This study used the semi-structured interview method as it allowed the interviewer to explore the participants' understanding of their world in relation to the research theme; enabling the researcher to clarify this understanding through the questioning. Whilst providing a deeper understanding of the world of sonography through the eyes of the practitioners, the semi-structured interview technique also facilitated the inclusion of themes not previously considered by the researcher. However, Brinkman (2013) argued that semi-structured interviewing due to the constriction of the research themes did not encourage this. In contradiction, Cohen *et al.*, (2007) highlighted that, in semi-structured interviewing, the researcher was facilitated in adopting an openness to new phenomena allowing for spontaneity to explore deep issues which the researcher concurs with.

The interview process was argued to be enhanced by the planning and structure of the questioning (Brinkman & Kvale, 2009). Kvale's (1996) seven stages of interview design and implementation (thematising, designing, interviewing, transcribing, analysing, verifying and reporting) were commonly cited in the literature.

Piloting of the semi-structured interview was undertaken to ensure the questions were relevant to the study as well as test the researcher's interviewing skills.   Undertaking the pilot allowed for the refinement of the interview schedule (Marshall & Rossman, 2011). The use of pilot studies when using interviews allowed the researcher to practice the interview schedule and

ensured the questions were not leading or biased and that they would generate data relevant to the research question thereby increasing the "face validity" and the "content validity" of the data generated (Silverman, 1993). The semi-structured interview was piloted in two mock interviews (Appendix 15 – Pilot interview Schedule). The participants in the pilot study were not taken from the study's sample population. Due to the sample population being small it was deemed not appropriate to use participants from the sample population for the pilot study; this could have posed a significant risk of contaminating the honesty of the data if prior knowledge of the interview schedule was gained. Feedback from the pilot study was used to refine the interview schedule (Appendix 16 - Phase 1 and 2 Combined Interview Schedule).

In keeping with a critical theory framework, the interview focus was developed from the review of the literature to ensure that relevant areas for exploration and consideration were included as well as appropriate structuring of the questions so as not to lead or bias the responses. The interview questions were kept as short as possible and clear, reducing ambiguity so that the participants were encouraged to provide longer answers. Any prompts used by the interviewer were short, encouraging participant responses to provide clarity or deeper exploration of the theme. Interviewer follow up of responses was used to aid clarity and to verify the interviewer's interpretation of the answers throughout the interview as supported by Kvale's (1996) quality criteria for interviewing.

The interviews were digitally audio recorded to minimize note-taking during the interview and to allow the researcher to interact with the interviewee whilst providing an accurate documentation of the verbal exchange. Additional memo notes that supported the audio recordings were written up immediately post interview to reduce error of recall. These memo notes were recorded on the transcripts and were mainly of observations of non-verbal communication that provided context of mood with which the responses were given. The audio recordings of the interviews were transcribed and coded within two days of the interview by the researcher to ensure participant confidentiality.

Due to the quick turnaround of interview to transcription the researcher was able to get an overview of the data as it was being gathered; making comparisons across the interviews enabled the researcher to identify after the first six interviews that there was a fundamental gap in the data being collected that was crucial to understanding why these attitudes and opinions were held. The *doorknob phenomenon* is argued to often occur after the formal interview has ceased whereby the interviewee reveals interesting information that provides greater understanding (Wittink *et al.,* 2017). Whilst the doorknob phenomenon was not interviewee instigated in this case (the researcher felt it was necessary to ask more questions after the initial interviews were undertaken) the principle of the phenomenon for the first six interviews was applied. The data gathered after the first six interviews indicated that the researcher needed to contextualise the participants' responses, this created the opportunity to gather the data for phase 2 of the study. Additional questions were added to the interview schedule to explore the participant's perceptions of their working world (indicated in red on the combined interview schedule – Appendix 16). The first six participant's interviews were revisited, and the additional questioning was undertaken; the remaining four participants were interviewed using the complete interview schedule.

A sample of transcriptions of the individual interviews were verified by the participants as an accurate record of the interview discussion. The process of member checking ensured reliability and validity of the data as well as controlling researcher bias (Cohen *et al.*, 2007). Member checking involved the verification of a true record and accurate interpretation of the participant's narrative. This occurred at two points within this study. Firstly, the researcher's interpretation and understanding of the participant's responses were checked during the interview process with prompts used such as "have I got this right", "can I just check" and "is it correct that". If ambiguity remained, then the researcher used further prompts such as "can you just clarify" etc. Affirmation that the researcher's interpretations and understanding were accurate was argued to strengthen the credibility and reduce researcher bias (DePoy & Gitlin, 2016). Member checking was also used after transcription to ensure that the narrative was an accurate record of the interview and their responses, ensuring

that the analysis was undertaken on robust data. Participants were invited to make changes to the record where they felt it was inaccurate; however, none of the participants indicated that any changes were required. The first three transcriptions were verified by the participants. No changes to the transcriptions were advised. After transcription, the data was transferred to the computer software package QSR-NVIVO for analysis.

The researcher transcribed all the interviews so that participant confidentiality was maintained. Furthermore, it was argued that, if transcription of oral dialogue was undertaken by more than one person, inter-subjective reliability was questionable as interpretations may differ (Kvale,1996).

3.3.5 Data Analysis

QSR-NVIVO version 10 was used in the management of the data including the storage of transcriptions, participant demographics, memos and coding. Active links within software were utilised to highlight relationships within the data and aid analysis. The use of organisation tools within the software enabled the researcher to link related data and use advanced coding applications using nodes and sub-nodes. Tree maps and frequency maps provided a visual mapping of the data enabling core themes to be highlighted. Coding stripes were allocated to nodes (main themes) and sub-nodes (themes within the main theme) in order enable the grouping of overlapping nodes and thereby further refine the emerging themes (Appendix 17 – example of NVIVO advanced tools)

3.3.5.a Inductive Thematic Analysis

Braun and Clarke (2006) argued that thematic analysis was a poorly defined, and rarely acknowledged, analytical tool and yet was commonly used within qualitative studies. Whilst content analysis and thematic analysis both aimed to examine narrative materials of life stories and experiences and were often terms that were used interchangeably, it was noted that there were some significant differences (Vaismoradi *et al.,* 2013). Content analysis was argued to be useful for the simple reporting of common issues found in the data, which would have been appropriate for phase 1 of the study. However, thematic analysis, being more flexible, provided a more complex account of the data that

was rich and detailed and facilitated the identification of commonalities across the interview data thus providing a more nuanced account of the data that was required for phase 2 of the study (Braun & Clarke, 2006).

Inductive analysis was firmly grounded in the naturalistic tradition revealing themes, patterns and meanings within the narrative (DePoy & Gitlin, 2016, p.316). Interpretive research (as previously outlined) was founded on the pluralistic view that there were multiple realities (Murphy & Yielder, 2009). Therefore, by using inductive analysis, it was possible to capture these multiple interpretations of reality as they emerged from the data (DePoy & Gitlin, 2016; Murphy & Yielder, 2009).; one example of this in the data was the different interpretations between the participants concerning the impact locum sonographers had on the workforce crisis; this is discussed in more detail in Chapter four.

Within the literature there was much debate as to how themes were identified. The term emergent theme was argued to be misleading. Braun and Clarke (2006) argued that themes must be generated from the researcher's appraisal of the data and thereby created links within it. The researcher's values and theoretical position were argued to be very influential in the formation of themes and the decision-making process as to what constituted an important theme, often being guided by the relationship of the data within the theme to the research question. (Taylor & Ussher, 2001 cited by Braun & Clarke, 2006). The author decided to adopt the approach of relevance to answering the research question in the identification of themes rather than frequency due to the small sample size of participants. The researcher presented an interpretation of the world of sonography using themes within the data, seen through the eyes of the participants, rather than a theory.

Throughout the justification of using inductive thematic analysis the significance of the researcher in the project was apparent, due to the centrality of the researcher to the coding, identification of themes and the importance given to the themes. Researcher position and bias needed to be acknowledged and minimised throughout the collection and analysis phases to ensure reliability

and validity of the findings. Braun and Clarke (2006) advocated a continual reflexive dialogue by the researcher in order to address and minimise researcher influence; for this study, the researcher kept a research diary that provided a platform for reflection and reflexivity (appendix 18 - excerpts of the research diary).

3.3.5.b Coding

Initial open descriptive coding of the themes was exhaustive for both phases of the study. The nodes were deconstructed and re-coded into theme nodes. The recoding process referred to as axial coding by Charmaz (2011) provided clarity of the data and facilitated the opportunity to explore relationships within the data which Depoy and Gitlin (2016) suggested provided a deeper understanding and interpretation of the research data.

Initial coding for phase one of the study, that aimed to explore the participants' opinions, attitudes and beliefs, concerning the role and expected clinical competences of the graduate sonographer in comparison to existing grades of sonographers, provided rich descriptive statements. These descriptions of the participant's opinions and attitudes were coded into subthemes which demonstrated cross-cutting themes, such as value and status, within the main themes of power, protectionism, professional identity and frameworks. These main themes were interpreted to underpin the overarching theme of implementing change (Figure 2 – Phase 1 Coding diagram, page 98).

The data gathered in the second phase underwent the same rigorous coding and identification of themes. Phase 2 intended to explore the working world of the sonographer through the participants' eyes thereby providing some context to the data gathered in phase 1. Initial, thick descriptions of the participant's perceptions and attitudes were gathered and then coded into subthemes. Similar cross cutting themes identified in phase 1 such as value and status were evident in phase 2 in addition to the cross-cutting themes of workforce and leadership. The researcher interpreted the data within these subthemes to create the four main themes of power, protectionism, working world and frameworks that were used to create a new understanding about the

participants' perceptions of the culture of sonography as they had experienced it. (Figure 3 – Phase 2 Coding diagram, page 119).

The research nodes were categorised into themes, not by frequency of occurrence (as often seen in deductive content analysis) due to the small sample size, but, by significance to the research question and emphasis of importance/meaning implied by the participants. For instance, competence as a node was the highest populated data set however the researcher interpreted this to be a cross-cutting issue/pattern within the themes rather than a discrete theme. The participants reflected different perspectives of the sonography workforce and thereby it could be argued each participant had a different value base from which they responded to the questions as indicated in the results (Chapter 4). Side notes and memos concerning the participant's behaviour when responding to questions facilitated the researcher to make interpretations concerning the strength of emotional connection each participant had to a theme (Appendix 13 & 14: sample of transcripts); the emotional emphasis was interpreted to be indicative of significance, rather than frequency, across the participant responses.

Whilst the software package did enable the effective storage and management of the data the researcher revisited the data set manually which facilitated more creativity and flair in the analysis phase as supported by Corbin and Strauss (2008) and Seale (2006) who also suggested that mechanisation of software packages for analysis could also lead to missed opportunities to consider wider interpretations of the data and deeper knowledge generation.

Issues with reliability and validity were raised when considering the possibility of multiple interpretations and it was argued that it was essential that abduction[1] of the data was undertaken by revisiting and re-analysing the data to ensure the appropriateness of the coding (Denzin & Lincoln, 2013; Depoy & Gitlin, 2016). Throughout the data collection process all transcriptions were re-appraised for consistency of coding to themes. Cohen *et al.*, (2007) stated that the validity of

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[1] Abduction of data: identification of patterns within the data - Abduction provided confirmation of the coding applied

the thematic analysis was dependent on the coding process, suggesting an exhaustive analysis of the data was crucial to address the issues concerned with validity and reduce researcher bias.

Peer verification was undertaken to affirm that the researcher's interpretations were appropriate and credible. An independent peer was employed to code two transcripts blindly and these were compared to the researcher's coding. Any areas of disagreement were identified and discussed; no recoding was deemed necessary. DePoy and Gitlin (2016) suggest that the process of peer verification provides a catalyst for the researcher to consider competing interpretations and reflect on how they may enhance the research findings. In the author's opinion, the process of peer verification not only enhanced the credibility of interpretations made but also provided an opportunity to consider other perspectives thereby facilitating deeper understanding of the complexities within the data.

3.3.5.c Secondary Analysis

Within a critical theory framework, it was suggested that discourse analysis was most appropriate (Gee, 2014), however the purpose of this study was not to provide the sonographers with power through giving them a voice but through creating an understanding of how the attitudes, opinions and values that the participants held were influenced by the sonographer occupational culture. Whilst the study's aim was not to interpret the way language was used, but rather the content of what was said, to provide context it was deemed beneficial to analyse how the participant sonographers expressed themselves when referring to concepts such as culture, power and protectionism.

3.4 Rigour, Trustworthiness and Credibility

There was much debate in the literature concerning rigour and trustworthiness within qualitative research and especially naturalistic enquiry whereby the findings were reliant on interpretation (Denzin & Lincoln, 2013; DePoy & Gitlin, 2016). To enhance rigour, trustworthiness and credibility of naturalistic interpretative research it was suggested that six elements needed to be

considered in the research process: triangulation, saturation, member checking, reflexivity, audit trail and peer verification (DePoy & Gitlin, 2016). The researcher considered these six principles during the research process to ensure that the findings were trustworthy and credible.

Triangulation is where one source of knowledge is appraised against one or more different sources of knowledge in-order to determine the accuracy of that knowledge and to facilitate a more complex in-depth understanding (DePoy & Gitlin, 2016). The term triangulation had more recently been referred to as crystallisation, being the comparison of different sources that explained the research question (opcit). Triangulation in this study, whilst not in its truest sense of comparing results from different sets of research data, was sought by comparing this study's findings to other sources in literature in order to validate or refute the conclusions.

Saturation, as previously discussed, refers to a point where the data was deemed to provide sufficient information (Denzin & Lincoln, 2008). Completion of data collection was indicated when the data gathered did not provide additional information, insights or new understandings. DePoy and Gitlin (2016) stated that, if saturation had not been achieved, then credibility of the interpretations was questionable. After conducting ten interviews it was apparent, through comparison of the data gathered, that there was no new information emerging from the narrative of the participants and therefore it was determined that saturation had been achieved and a comprehensive credible interpretation could be achieved.

Researcher reflexivity (self-examination) is essential when undertaking naturalistic research due to the intimate relationship the researcher has with the process. It was agreed that in naturalistic enquiry (because of this close relationship) it was impossible to eliminate researcher bias. Through self-examination the researcher identified and acknowledged where their interests impacted on the research, thereby increasing the trustworthiness and credibility of the findings put forward. DePoy and Gitlin (2016) advocated the inclusion of a reflexive report within any research manuscript as this was argued to

encourage the researcher to examine their personal biases and perspectives and raised awareness of how these influenced how and what was learned (Denzin & Lincoln, 2011). Chapter Six provides a reflexive report that identified the researcher's position in the research topic and how this may have influenced the research process and findings. The reflexive report was informed by the research diaries that were collated during the research process (Appendix 18: research diary excerpts).

The development of an audit trail of the research process was facilitated by the research diaries collated throughout the research process. The documentation of decisions made concerning sample population, interview method, coding and theme decisions provided a robust review of the thinking and logic behind the decisions made. Clear articulation and justification of the research method was documented within the research diaries and facilitated reflective practice that informed future decisions (DePoy & Gitlin, 2013)

Member checking was undertaken to affirm that the researcher's interpretations were appropriate and credible. No areas of disagreement were identified so recoding was not necessary.

3.5 Conclusion

The methodology of this research project firmly adhered to a constructivist approach for knowledge creation within a relativist ontology.   A critical theory framework was employed in-order to direct the study to create data that could be emancipatory for the sonographer community. The findings of this project were the researcher's and participant's interpretations of the world of sonography and not an absolute truth as indicative of qualitative methodology, nor did it create generalisations that could be attributed to the sonography workforce as a whole.

Ethical and governance processes were adhered to throughout the data collection and analysis process with clear articulation of how validity and reliability of the findings were ensured.

3.6 Summary of Chapter 3

The philosophy of the methodology for this study was from a constructivist standpoint adhering to a relativist ontology. Interpretivism in a subjectivist epistemology underpinned the qualitative methods undertaken for data collection and analysis. A critical theory framework had been applied to the research methodology in-order to facilitate the interpretation of the research findings, providing a potential platform for emancipatory change within the world of sonography

Ethical considerations were articulated and addressed. Trustworthiness and credibility of the research findings were ensured by the adoption of processes that enhanced the validity and reliability of the research data and analysis.

Chapter Four

Findings

4.1 Introduction

The purpose of this chapter was to present the research findings from the qualitative semi-structured interviews. The results will be presented without reference to supporting literature and separate to the discussion. Chapter Five will discuss the findings alongside the existing body of knowledge within a wider context. The analysis is mainly presented in the form of participant quotes that are interwoven with researcher comments thereby providing evidence that the interpretations made from the data were grounded within the interview narratives. Where a series of dots (…) have been used within the quotations this was to remove any identifying data thereby ensuring participant confidentiality and anonymity as well as to indicate where irrelevant information had been removed. However, basic participant demographics is provided in table 3, with a full participant profile provided in appendix 12.

P	Advanced Practitioner	Consultant practitioner	Locum	Ultrasound manager	Ultrasound academic	Professional background
A	√			√		Radiographer
B	√				√	Radiographer
C	√			√		Radiographer
D	√				√	Radiographer
E		√				Nurse
F	√				√	Radiographer
J	√		√			USA sonographer
H	√				√	Midwife
K	√					Radiographer
L	√					Radiographer

Table 3: Basic Participant Demographics

Data gathered from the interviews was analysed and constructed firstly into very specific sub-themes and then regrouped into core thematic categories for each of the two phases of the study as outlined in Chapter 3. Complex

relationships between the themes were evident from the participant's narrative with sub-themes cross cutting some of the main themes. The themes within this study were identified as concepts that were important to the research question and formed a pattern within the data set. Frequency/prevalence of a concept was used as an indicator of a theme, but due to the small sample size, frequency/prevalence was not used to indicate its importance amongst the themes (as previously discussed in Chapter 3 pages 87-88). Braun and Clarke (2006) argued that there was no agreed frequency of a concept for determining a theme and that researcher judgement was fundamental to determining what constituted a theme. Within this study the researcher used the broad research question to guide the identification of themes in each phase, but also allowed flexibility to ensure concepts not previously considered could be included providing a much richer analysis of the data and reducing researcher bias.

4.2 Phase 1: Findings

Implementing change, was interpreted to be the overarching theme of phase 1 that sought to meet aim 1 of the study: The exploration of attitudes, values and opinions of the sonographer participants toward the role of a graduate sonographer which would require great changes to the historic sonographer career structure and education provision. All themes and subthemes were related to the core theme of implementing change, which provided a coherence to the complexity of intertwining themes found within the interview narratives as displayed in the flow diagram (figure 2)
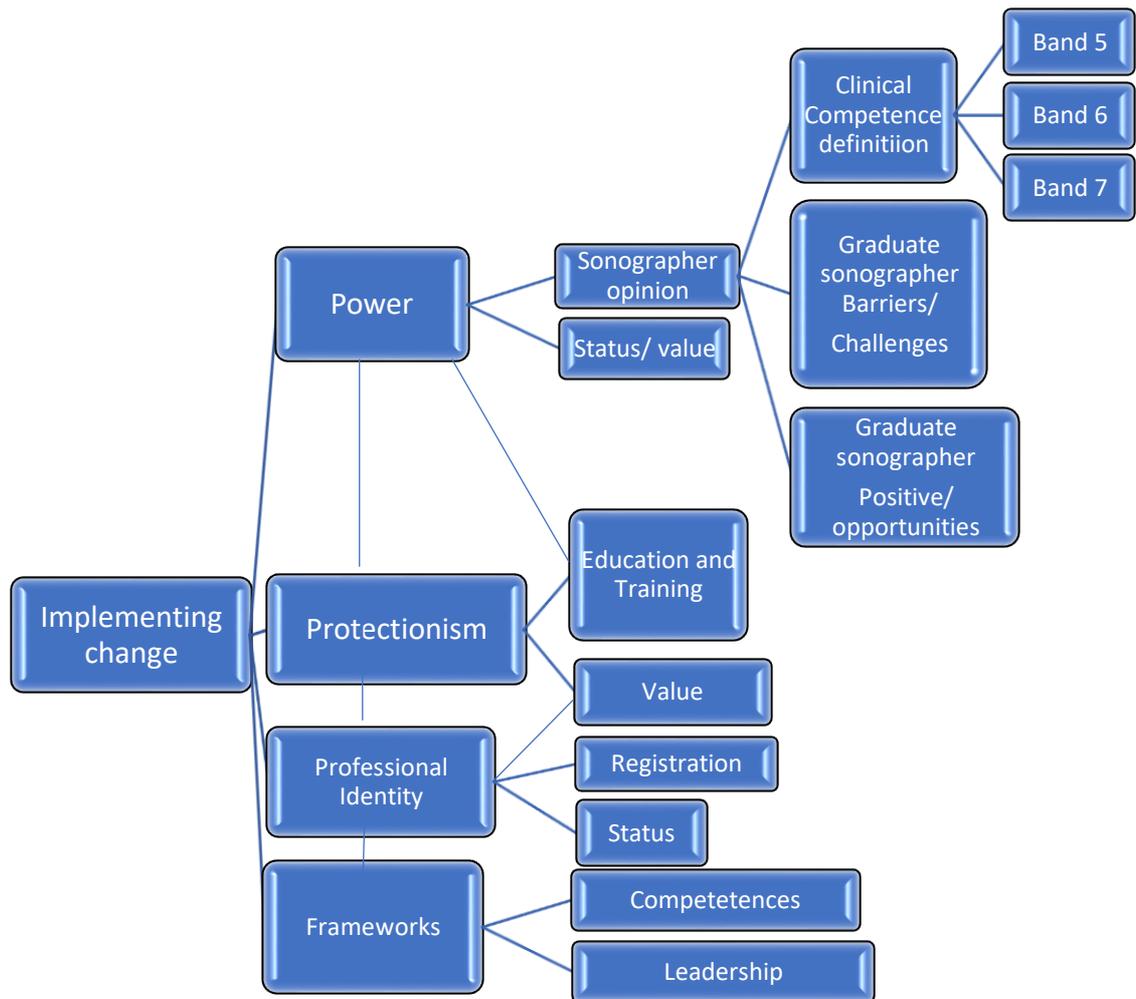
Figure 2: Phase 1 Coding Diagram

The main themes of power, protectionism, professional identity and frameworks each provided further clarification of the participant's perceptions of the challenges and opportunities when implementing change (such as the introduction of the graduate sonographer grade). These main themes, whilst identified as being discrete, were interpreted to be linked (professional power and identity create an environment for protectionism to be fostered; clinical frameworks provide articulation of professional identity). Intertwined sub-themes identified across the main themes were value, status and education and training; each providing context to the main themes of power, protectionism and professional identity. Whilst clinical competence was interpreted to be embedded across all of the themes, illustrating both linear and horizontal linkage, it was interpreted to be an issue rather than a discrete theme or sub-theme. Clinical competence as a concept was used by the interviewer to

explore the attitudes and values of the participant sonographers and therefore was used to create the discussion rather than being part of it.

During the analysis of the interview narratives the researcher acknowledged the complexity of the entwined values and opinions of the participant sonographers concerning the implementation of change to the sonography career structure with the introduction of the graduate sonographer.

4.2.1 Implementing Change

Implementing change was identified as the core overarching theme of the interview data gathered in phase 1. This core theme was key to the construction of a new understanding as to why sonographers held strong attitudes and opinions towards the graduate sonographer implementation. The interviewees were asked to consider the potential role and competencies for band 5/graduate sonographers educated at BSc (Hons) level as well as those that already existed at band 6, 7 and 8.

The predominant interpretation from the interview narratives (irrespective of role) was a negative reaction towards implementing any change to the career framework for sonographers.

> *"Yeah – I'm sorry I'm so negative – I think most people will feel that" (participant L)*
>
> "*I think that will be the challenge in getting people to understand" (participant D)*
>
> *"I think it would be extremely difficult to get everyone to agree" (participant B)*
>
> *"I think there is going to be resistance from existing sonographers with this err" (participant C).*
>
> *"somebody who's been in the profession for a long time and thinks it works just fine could be resistant to changing". (participant A)*
>
> *"I think they will find it difficult to understand" (participant E)*
>
> *"a lot of sonographers are resistant to change" (participant F)*
>
> *"I think it's a natural part of the human condition, is that if they are going to change something it makes you nervous that they are going to change it for the worst". (participant K)*

Some participants thought change was overdue and inevitable. However, this response was mainly from department managers or lead sonographers who

were responsible for service delivery and charged with managing the effects of increased demand and a depleted workforce.

> "…I think there should be a career progression framework definitely for sonographers" (participant L)

> "I know some of those areas are controversial, but I don't think it should stop us looking at them" (participant A)

> "I know nurses that are a band 5 that have got Doctorates – now if we went up the same path the sonography has gone …the NHS would collapse" (participant E)

The responses documented within the interview data facilitated the researcher to identify the main themes of protectionism, power, professional identity and career frameworks that underpinned the core theme of implementing change and aided conceptualisation of the complexity and influencing factors of the phase 1 core theme.

Findings for each main theme are presented with evidence from each of the subtheme categories depicted in figure 2.

4.2.2 Power

The main theme power was evident within the transcripts; suggesting that the participant sonographers deemed themselves to be a powerful occupational group within the organisation of health care.

> "**sonographers as a profession** are very powerful" (Participant F)

> "I think **we** think **we** are better than everyone else" (Participant D)

> "I think being in a profession where there is a significant deficit regardless of what your profession is puts you in a strong position because you are not easily replaceable" (Participant F).

> "there's already a bit of an attitude among sonographers… (participant B)

It could be interpreted from the interview narratives that the participants felt that sonographers were powerful and dictated clinical roles and grade bandings. Narratives that used elitism, value and status were interpreted to indicate the perception that sonographers held a position of power amongst other health care professionals.

<u>4.2.2.a Status/value</u>

The position of power within the organisation was perceived to be linked to the grade/banding of the professional role. The higher banding was suggested by two participants to reflect the value that they placed on their clinical practice and not just because of the need to retain and attract sonographers to vacancies; therefore, suggesting that because they were deemed a valuable resource the sonographers were graded at higher bandings.

> ''*But ultrasound – **we've** made ourselves that elite **we're** better than everybody else - train in ultrasound and you get a 7 and actually **we are – all sonographers** are a band 8 errm – and it's just that elite – **we're** better than everybody else attitude that **we've** always had that - it's that superiority" (Participant D)*

> *"...I think sonographers should be a band 8 because we do a report, I think we do more than like an MRI radiographer who just performs an exam but doesn't actually report the study" (Participant J)*

Two participants (neither of whom were from a radiographer background) suggested that the banding for sonographers was initially influenced by the radiologists when they delegated their ultrasound practice to the radiographers transferring not only their skill base but also some of their power status.

> *"Well maybe it's the radiologist that **we've** got to blame for all of this then!" (Participant E)*

> *"we have to be realistic of where the power lies ...that generally speaking is the radiologists" (Participant H)*

The suggestion that sonographers being supported by the medical profession, which was deemed to be the ultimate powerful occupational group within the organization, had strengthened their position of power was indicated by one participant.

> *"So really the security of the future of ultrasound or where it goes is very much at the hands of the medical profession" (Participant H)*

The indication of how power was perceived to be achieved by sonographers from the interview narratives was unclear as it could be interpreted from a usurpation or occupational imperialism point of view. Participant H's comment could indicate that the perception was that sonographers' power came from skills being delegated down from the medical profession (occupational imperialism) and thereby was dictated by the medical profession rather than the sonographers being proactive and taking skills traditionally undertaken by the

medical profession into their role and thereby gaining power through usurpation. This was a concept that was explored further in phase 2 of the study.

4.2.2.b Education and training

It was the opinion of one participant, with a background in education, that the traditional training of sonographers at post-graduate level underpinned the elitist attitude that placed them in a more powerful position than other occupational groups.

> "…in ultrasound straight away, onto a PG ultrasound course and **then they** get a band 8 its elitism" (Participant D)

Maintaining entry education at Master's level provided sonography with a status above other professionals who can enter nursing, midwifery, physiotherapy, radiography etc., at graduate level. This higher status of entry education was interpreted to reinforce the occupational group's sense of elitism amongst other health care professionals, as indicated in participant D's response cited earlier, with regards to being banded higher upon qualification and entry into the occupation than most other health professionals.

Reluctance to consider any training initiative that would address the workforce deficit was interpreted by one participant as being a vehicle to maintain this powerful position.

> "And from the sonographer's point of view **they** get paid an 8 now why would they make an effort to train anybody else it's more like hard work…. if there wasn't a deficit they wouldn't all get their 8's so **they are** not going to support something that potentially means they might get down-graded and their little friends aren't going to get their 8s" (Participant D)

> "when people have that choice of opportunity they don't want to work towards change" (Participant B)

The participants' narratives suggested that they believed sonographers had the power to influence the banding that their clinical practice was awarded as well as the ability to resist any changes to education and training. Resistance to changes in education and training of sonographers (indicated by two participants) was argued to be possibly linked to a fear of reducing their position of power due to an increased supply of sonographers. This resistance was interpreted to be clearly demonstrated by the participants' disinclination to

identify clinical competences at all band levels other than those in existence (7 and 8) that would create a complete career framework for sonography.

During secondary analysis, it became evident throughout the participants' narratives in both phases of the study that the participants believed power to be owned by the collective rather than the individual with the continual use of "we" or "they" (highlighted in bold within the participant citations). Furthermore, the use of the collective terminology was interpreted to be indicative of the participant's individual desire to create an illusion of distance from the behaviour characteristics associated with being powerful. This could suggest that, whilst the sonographers were happy to use their power status, they were not comfortable with how they might have been perceived by other professionals because of being powerful; therefore, indicating an awareness of professional jealousies that the position of power might have reinforced.

4.2.3 Protectionism

Protectionism throughout all the transcripts was coded on 106 occasions; being second only to competence which was coded 109 occasions. However, as previously indicated competence was interpreted to be a thread, posed by the interviewer, that was embedded across all of the themes rather than as a discrete theme. Protectionism was interpreted to be of great significance to understanding the participants' perceptions of implementing change in sonography with particular focus on how protectionism influenced the participant's attitudes and opinions towards the role of the graduate sonographer.

It was evident from the participants' responses that, when asked to consider sonographer practice that could be undertaken by sonographers at band 5 and 6, there was an element of occupational protectionism. The interview data indicated that clinical competence identification was used by the participants as a method of protectionism through closure of practice, thus maintaining status within the organisation for the band 7 sonography skills. To develop a more meaningful understanding of this phenomenon of occupational protectionism within sonography it was necessary to explore the subthemes to construct new

meaning as to where the protectionism was rooted and how it influenced the implementation of change.

The protectionism theme was defined by the resistance and negativity found within the participants' responses towards the concept of a graduate sonographer. Protectionism was evident when evaluating the responses to being asked to identify band 5, 6, 7 and 8 clinical competences.   There was an overall reluctance from all participants, irrespective of grade or role, to identify any role or area of clinical competence that a band 5/graduate sonographer could undertake as indicated in the responses below.

> *"I don't think there's any role for a 5" (participant J)*
>
> *"I think more work needs to be done on just what a band 5 would look like and what they can do" (participant A)*
>
> *"That's a really controversial difficult question" (participant D)*
>
> *"I don't know how that would fit in" (participant L)*
>
> *"I don't have one – this is the problem" – (participant C)*

At times the participants' responses were quite strong with definite resistance shown towards consideration of the role of band 5 graduate sonographers; this interpretation was supported by the non-verbal data recorded as memos and side notes including "direct eye contact", "arms folded", "clipped tone", "repeated for emphasis" "quick, decisive response" as indicated in the transcriptions (appendices 13 & 14).

Interestingly the highest level of professional protectionism was seen in participant J's responses who was a locum sonographer, educated at BSc level in the USA. The resistance was interpreted, not to be towards the role of a graduate sonographer, but to the banding awarded to this role; protectionism was interpreted by the researcher to be driven by the desire to maintain recognition of the specialist clinical skills through higher banding.

> *Interviewer: "so you don't feel that there is a role for a band 5 sonographer?"*
> *Participant: "I do not, no" (participant J)*
>
> *Interviewer: "Ok so there would be no clinical competencies that you could look at that would be associated with this role (band 5)?"*
> *Participant: "No" (participant J)*

> *Interviewer: "in your opinion what would be the role if we were to introduce a graduate sonographer on a band 5 ?"*
> *Participant: "I don't have one" (participant J)*

Furthermore, the researcher interpreted these responses to be heavily associated with the perceived devaluing of the graduate sonographer role by associating it with a band 5 grading which had a lower status in the clinical competence framework. It was acknowledged that the responses cited from participant J were heavily influenced by the fact that their entry into sonography was at BSc level.

One participant indicated that they thought that the resistance towards the graduate sonographer was clinical led, reporting that their survey of clinical departments towards implementing a BSc education programme found the general feeling from sonography department managers was on the whole negative, suggesting that protectionism within sonography was apparent at all levels.

> *"there's no use for them no". (participant D)*

An interesting factor was those participants that did identify a potential area of ultrasound practice where band 5/graduate sonographers could be employed, identified an area of practice that was not their area of expertise. This suggested an element of protectionism within the occupation of sonography; participants were not prepared to consider their own area of ultrasound practice for the inclusion of a band 5/graduate sonographer but could identify a role in an area of ultrasound practice that they did not undertake on a regular basis.

> *"we've looked at whether the dating scans are appropriate" – (participant C- general medical sonographer)*
>
> *"certainly not thyroids with the new classification of thyroid masses errm" – (participant F - general medical sonographer, gynaecological and obstetric sonographer)*
>
> *"Not gynae I wouldn't have thought" – (participant F - general medical sonographer, gynaecological and obstetric sonographer)*
>
> *"kidneys you know kidneys and abdomens" – (participant J- main focus MSK sonographer)*

One participant who felt that a role for band 5/graduate sonographers was possible, "as there were band 5's in other professions" (participant E), indicated a high level of protectionism for their own area of practice with the comment:

> *"would I want a band 5 newly qualified sonographer working in my … then probably not"". (participant E)*

The responses towards the graduate sonographer role demonstrated, not only outward occupational protectionism, but also inward protectionism amongst clinical specialisms within sonography and also amongst the different professional groups undertaking sonography; this created a complex and challenging landscape of protectionism within the occupational community of sonography and was explored further in phase 2 of the study.

The participants all agreed that a band 5/graduate sonographer could not work in isolation; this was in contradiction to the HCPC standards of proficiency (2013) that stated a band 5 radiographer should be an autonomous practitioner and described by the Society of Radiographers as an independent practitioner; this was further supported by the Nursing and Midwifery Council who stated at point of registration a practitioner was autonomous and accountable.   The participant responses could be interpreted as reinforcing the value of their role as a band 7 or 8 advanced practice sonographer and protecting their position/status within the organisational hierarchy.

> *"well I won't want them left unsupervised for anything at all" (participant F)*

> *"I wouldn't expect them to work in isolation" (participant E)*

> *"I can't see this person working in isolation" (participant A)*

Value and status as concepts were interpreted to be very closely related within the participants' responses and were particularly strong within this theme. When undertaking the secondary analysis this was made evident in the phrasing of the response below with emphasis being placed on "just" suggesting that the participant's attitude was that a band 5 had less value and status within sonography.

*"you couldn't have **jus**t a band 5 working on their own" (participant K)*

In addition to the agreement of not working in isolation, all participants indicated

an opinion that reporting the examination could not be a clinical competence for band 5/ graduate sonographers. The identification and closure of practice of the specialist clinical skill of reporting an examination was interpreted as protecting the advanced sonographer practitioner's status within the clinical organisation as well as maintaining the value of their professional identity.

> "**Certainly** not writing their own reports" (participant F)

> "you can't be a band 5 and report a study" (participant J)

Again, during secondary analysis, the emphasis of the word "certainly" indicated a strength of feeling and opinion that the respondent had toward restricting (closure of practice) the competence of reporting to sonographers at band 7 or above. Whilst this was suggestive of using clinical competences as a mechanism of protectionism, this was acknowledged as not being unique to sonographers as it is also found in other areas within radiography as well as other professions.

On comparison of the participant's responses to the consideration of the band 6 sonographer role they appeared to be more favourable towards a band 6 than a band 5. The band 6 grade was already existent in some departments thereby suggesting more acceptance of this grading being possibly due to familiarity:

> "traditionally what we've done is focus on one area that they can do" (participant A)

"Traditionally" suggested that band 6 sonographers were used within the participant's department and thereby was a concept that was already accepted by the participant. It was also indicated by participant E that the acceptance of a band 6 sonographer role could also be related to the discrepancies between how different professional groups graded their sonographers.

> "whereas I've got band 6 nurse-sonographers" (participant E)

The strength of feeling towards considering band 6 sonographer roles and clinical competences was overall less negative than the band 5 graduate sonographer considerations, with the participants demonstrating a willingness to consider roles and clinical competences for this band of sonographer; even if within a small remit of practice. However, the majority of these responses were from clinical leads or department managers who may have had a different drive

(fiscal) for grading some sonographers at band 6 rather than all at band 7.

> *"6 has a narrow range of complex"* (participant A)

> *"you could have them **doing just** something specific"* (participant B)

> *"but I think they should be able to do the middle bit the **actual technical** ultrasound examination to a certain level"* (participant D)

> *"a 6 could have a range of examinations but not work independently"* (participant L)

It was acknowledged that, even within the responses above, elements of professional protectionism were evident with the suggestion that the band 6 role required less clinical skills than a band 7. This suggested that the participants believed the value of clinical skills were interlinked with status, that was indicated by the banding awarded; if the skills were highly valued then a higher status/banding would be achieved.

Most of the participants agreed that band 6 sonographers would not be expected to report independently. However, these responses were mainly from participants with a radiography professional background who, as a sonographer grouping, were all banded at 7 or above.

> *"Certainly not writing their own reports"* (participant F)

> *"they might not have the same skills for the reporting"* (participant D)

> *"band 6 it could be potentially that they could report some things but not all"* (participant B)

It was noted that midwives, carrying out obstetric only scanning, were often employed as band 6 sonographers (Parker & Harrison, 2015) and were independently reporting ultrasound examinations. The discrepancies concerning sonographer bandings between professional groups (although the scope of practice was the same for a given area of ultrasound expertise) could be an explanation as to why participants from professions other than radiography did not exclude reporting as being a clinical competence for a band 6 sonographer

When asked to consider the role and clinical competences of band 7 and 8 sonographers the participants were more enthusiastic and positive about offering their descriptions and opinions. This may be due to the familiarity of

these grades, especially band 7, as they were already in existence. Familiarity could be argued to provide a feeling of safety; the maintenance of this state of familiarity and safety could be a key indicator for protectionism and resistance to change which could be perceived as threatening.

> *"key clinical skills and competencies around image capture and knowledge around pathology and anatomy as and reporting and independent practice for a band 7"* (participant C)

> *"7 is very much defined by autonomous independent practice which is very much linked to reporting yeah and decision making"* (participant B)

> *"I see the 8 as more of a clinical lead so I would be looking at them to have their finger on the pulse about new developments eerrr take responsibility for audit, and err clinical governance err coordinating CPD"* (participant A)

Equally this enthusiasm to articulate band 7 and 8 sonographer clinical competences and roles could be argued to be related to how the participants valued these sonographer grades as a recognition of the associated specialist skills, especially with comparisons made to other imaging practices

> *"I think the decision making is the key thing errm ultrasound is a bit different to the other imaging modalities in that you make the decision about the report as you are doing the scan it's a very dynamic process where as with MRI or CT scans there is a set of images acquired and then you can go back and forward through them as much as you like to write your report retrospectively"* (participant B)

Occupational protectionism was also evident when a participant from a professional background other than radiography was asked to consider the role and clinical competences of band 7 sonographers.

> *"when I think about a band 7 nurse who manages a ward or maybe a clinic manager errm their knowledge, skills, expertise to act, ability to act independently far outweighs what I see of band 7 sonographers and I think there is a massive discrepancy there"* (participant E)

This participant suggested that the specialist clinical skills of sonographers alone (when compared to the roles of other professions) did not warrant band 7 status; this was interpreted to suggest that professions that used ultrasound as an adjunct to their professional role, rather than a development or extension of their professional role, may not value the sonography skills as highly as their primary professional skills and may be a reason why professions such as midwifery did not band their midwife sonographers the same as radiographer sonographers.

Furthermore, professional jealousy was also indicated as an element of professional protectionism as indicated in participant E's response below.

> *"one of the arguments that got a band 7…was that they wrote their own reports and I was like whoopee do – you know I've been writing a lot of things for a long time why should writing a report get you paid more money?" (participant E).*

Secondary analysis indicated a high level of disrespect by the use of "whoopee do" for the skill of report writing, which the radiographer participants indicated was a key clinical competence for sonographers being graded at band 7.

The participants' responses suggested that there was an indication of professional protectionism, not only present outwardly as an occupational group, but also within the occupation of sonography amongst the different professions due to the inconsistencies of how banding/grading was awarded within and amongst health organisations; creating an environment for professional jealousy amongst the sonographer community to grow.

All participants, except one who was not from a radiography background, valued the clinical skill of reporting identifying it as a key clinical competence for band 7 sonographers. Reporting was identified as not being possible for band 5 and in a limited remit for band 6 suggesting a closure of clinical practice through clinical competence to certain bandings. Reporting, as a clinical skill/competence, could be interpreted to be used by the participants as a characteristic of the sonographer's professional identity as an advanced practitioner.

> *"generally, the principle of reporting independently is what gives you a 7" (participant F)*
>
> *''I think because I think a 7 is about reporting" (participant J)*

Allowing band 5 and 6 sonographers to report independently was perceived to devalue this clinical skill and dilute the sonographer's professional identity

The allocation of bandings being linked to clinical competences was evident within other allied health professions, nurses and midwives and was arguably the purpose for implementing the Agenda for Change and the 4 Tier model (Woodford, 2005). The participants' suggestions of restricting reporting competence to band 7 sonographers could be indicative of a method of closure to protect professional identity as well as maintaining value and status within

the organisation. Furthermore, it could be argued that the framework structure using clinical competences to identify roles and bandings may actually provide an environment for professional protectionism to be fostered.

4.2.3.a Value

Occupational protectionism was strongly linked to the value and recognition that sonographer participants felt they deserved for their clinical practice. The interview narratives suggested all the participants believed (irrespective of grade or role) that the recognition and value of their clinical practice and skills would be decreased if lower bandings were implemented.

> *"I think there will be resistance because I think at the moment it'll be seen as a dumbing down". (participant A)*

> *"**they** sometimes still feel that you are trying to undermine **their** errm **their** position and **their** achievement" (participant B)*

> *"there are a lot of people feeling threatened that it's a way of undermining **them** and devaluing **them**" (participant C)*

> *"people will feel that you are valuing ultrasound less because you are giving it a lesser grade" (participant K- Radiographer – sonographer band 7)*

Linked to the value aspect of protectionism was also an anxiety and fear of being down-banded; which would be seen to be devaluing the sonographer's clinical practice within the organizational hierarchy. Fear and anxiety was identified by all participants as one of the main factors underpinning the resistance to implementing a new clinical competence framework within sonography.

> *"..feel threatened in terms of **their** role" (participant B)*

> *"…and it's being protective of **their** profession and it's fear of change" (participant D)*

> *"….people will see that as a threat" (participant E)*

> *"…fear mainly – down banding etc." (participant F)*

> *"…ultimately **they're** feeling that it's them that is going to be demoted" (participant C)*

> *"Everybody feels threatened at the thought of being down-graded" (participant K)*

> *"**They'd** be terrified that **they** were gonna end up being down banded" (participant L)*

> *"errrm its just scary isn't it" (participant L)*

However, when considering the opinions and fears around the possible down-banding with the implementation of new clinical competences for lower grades of sonographers it did not appear to be closely linked with loss of financial remuneration, but more to the loss of professional recognition.

> *"…to be honest it would be my pride that's hurt more than my pocket – I think that's why I said it like that because (sigh) it would be a pride thing with me definitely – it wouldn't be the money". (participant L)*

> *"...they feel like they've given away some of their job which is the way radiologists used to feel one time with sonographers errm – **they** could feel quite defensive about that". (participant B)*

4.2.3.b Education and Training

The participant responses indicated that sonographer education and training being established at level 7 had, over the last two decades, reinforced professional protectionism. The interview narratives indicated a degree of protectionism with the reluctance to acknowledge that sonographer education and training could include a BSc (Hons) programme.

There was no significant link between the number of years a participant had qualified and their opinion of the academic level that ultrasound education and training should be accredited at. All but one participant indicated they thought ultrasound education should be at post-registration level

> *"personally, I want to keep it as a postgraduate Masters education - I think it benefits the patients and I think we should from my perspective push for getting the resources into education and training at the level the clinicians want it you know the clinical departments want it at - postgraduate at band 7" (participant C).*

As indicated, an interesting challenge to the ideology that sonographic education should be at post-registration level came from a non-UK trained sonographer who was trained at BSc undergraduate level (as is the requirement in the participant's country) which could have biased their view.

> *"my BSc degree in the US was more comprehensive than the MSc here" … "I think an undergraduate programme is the answer" … (participant J)*

However, the participant did suggest that band 5 was an inappropriate reflection of the training and clinical competences for the graduate sonographer.

> *"if people are worried that they aren't gonna be clinically competent with an undergraduate degree then maybe coming out school you could band them as a 6 until they met whatever criteria you wanted them to meet to become a 7 - but I don't think there's any role for a 5" (participant J)*

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Whilst the participant was not protective of the level of degree (BSc or MSc), there was an element of protectionism for the level of knowledge and clinical practice achieved during training and that this merited higher than band 5 grading.

There was evidence from two participants' narratives (an education and department manager perspective) that the clinical departments were perceived to be the "gate keepers" to implementing change in how sonographers were trained and educated.

> *"I think it is resistance from the clinical departments because they would have to buy into it there's no good us having a university course if the departments aren't a) going to support their training and b) employ these people when they're qualified, and I think it's the departments that are the barrier to it" (participant D)*

> *"the other barrier is the clinical placement, isn't it?" (participant A).*

Graduate sonographer employability, as indicated in the citation above, was used as a barrier to implementing change. The suggested lack of employability by the participants was interpreted as a perceived lack of value for the role of a graduate sonographer.

4.2.4 Professional Identity

Occupational protectionism was also indicated to be a product of both the need to be associated with a valued professional/occupational identity and to preserve the recognised characteristics of the practice of sonography. Professional identity was argued by the participants to be a challenge for the sonographers as they acknowledged they were not a recognised profession.

> *"well ultrasound isn't a registered profession so who are these people going to be registered by and where is their accountability, indemnity – you know – regulation" (participant D)*

> *"They don't even recognise ultrasound as a career (laughter) what else can you say about that …That's' a big negative. We have to sign up and say we do radiography, but we don't because we do ultrasound – so I think that's partly at the root of it that ultrasound isn't valued as much as it ought to be even". (participant K)*

Roles and clinical competences were interpreted to be the underpinning of the professional identity of sonographers. The desire to protect sonography from

being devalued through dilution with the implementation of lower bandings was evident in the participants' responses.

> *"I think there will be resistance because I think at the moment it'll be seen as a dumbing down". (participant A).*

> *"there are a lot of people feeling threatened that it's a way of undermining them and devaluing them" (participant C)*

Resistance to implementing changes to sonographer roles and career structure was evident in all the participant responses.

> *"I think generally people are quite defensive and reluctant about changing their role in a major way" (participant B)*

> *"It depends what you are expecting from it at the moment when we see the word sonographer we think of the band 7 package…if we do have a different structure ok the term sonographer might cover a range of things but its tradition what we see as a sonographer with the reporting and everything". (participant D)*

> *"we looked at what could a band 6 do? That a band 7 could release …we just couldn't find anything - there wasn't enough work for that band 6 to do …when we started looking at how the service would need to be structured it would be quite an inflexible service which would be actually detrimental to patient choice" (participant C)*

The sonographer professional identity was firmly linked to the clinical competences and skills associated with their practice. The introduction of a graduate sonographer with the same clinical skills was perceived by the participants to devalue their existing professional identity.

4.2.5 Frameworks

There was some uncertainty amongst the participants as to what frameworks were in place and how they were used. There was also an agreement that the multiplicity of frameworks in place also increased confusion and lack of clarity.

> *"the professional body will write one document and the Agenda for Change Framework will say one thing and something else and the KSF says something else – it starts to get a bit confusing as to which one is right and which one you should use" (participant B)*

> *" we are trying to fit into something that isn't there … Don't' work for ultrasound – I don't think so" (participant D)*

All participants were negative towards the way in which career frameworks had been historically developed and implemented within the health service and applied to the occupation of sonography

> *"I mean the things we still use is the agenda for change which is a completely out of date and never were set up properly for sonographers in my view"* (participant A).

> *"I think sometimes they, they can create problems and create a bit of confusion almost because you're trying to make a round peg go into a square hole – it doesn't always match"* (participant B).

> *"Well we've got a bit of the 4 and then the 7 and the 8 but we've not got the bit in the middle and therefore it's not a 4-tier structure we're trying to get ultrasound to fit into a structure that works within radiography and physio and other professions, but they are professions, so we are trying to fit into something that's not there"* (participant D)

> *"they can be quite errm restrictive"* (participant C)

Suggestions of discrepancies in implementation across occupational groups were evident in the majority of the interview narratives and suggested that this created professional jealousy within sonography.

> *"within the same hospital, within the same trust there is a discrepancy in banding which actually at the moment is detrimental to the radiography workforce"* (participant F)

> *"it's not until you look at how a different profession works that you that you start to think and it's not just about the money situation – it's not about what someone gets paid or doesn't get paid – it's about the level of skills that people have – although some people on band 7s don't equate to what other band 7s are"* (participant E)

There were perceptions that (radiographer) sonographers were banded more favourably than other professional groups such as midwives and nurses. The discrepancies with how the career frameworks were linked to bandings highlighted, and reinforced, the jealousies between occupational groups.

> *"if we sat down with a band 7 ward manager agenda for change job description and looked at band 7 sonographer - medical imaging sonographer job description – they would probably have some similarities errm but there would be very little of the lead, the manage, the governance issues that band 7 ward managers whether they are sonographer or not but in my area where I have a ward manager who is a sonographer they – her role is completely different and her accountability and the people she has to manage is far greater – she seems to have to do a lot more for her money than the band 7 sonographer"* (participant E)

> *"I think midwife sonographers err we have one midwife sonographer who is qualified in Obs she has automatically got her band 7 sonographer post yet radiographers have to have not only their obs and gynae, but they have to have abdominal qualification to get a 7"* (participant F)

In addition, intra-occupational jealousy arose from the implementation of banding within the clinical competence framework.

> "*obviously, I've been to places where people are doing a lot more than me and they're a band 7 and they must just look at me and despise me*" (participant L)

Respondents also felt that the number of different frameworks posed an added complication.

> "*the professional body will write one document and the agenda for change framework will say one thing and something else and the KSF says something else – it starts to get a bit confusing as to which one is right - and which one you should use*" (participant B).

A lack of consistency across the career/clinical competence frameworks was perceived by the participants to be further exacerbated by a lack of sonographer leadership.

4.2.5.a Leadership

The participants indicated that leadership was key to the successful development and implementation of a career framework.

> "*if it's used correctly but it all depends on who is planning the framework and as who has control over it errm which needs to be an ultrasound body that has control of it*" (participant J)

> "*I think the professional body would be a good place to start so using sort of the standards for practice that the Society of Radiographers have*" (participant B).

However, all comments suggesting the Society of Radiographers should lead the way with developing a sonographer career/clinical competence framework were made by the participants who were radiographer sonographers. Radiographers were the dominant professional group in the sample which was felt to reflect the national picture of the sonography workforce as supported by the CfWI (2017) report. It should be noted that ultrasound practitioners come from many professional backgrounds and therefore this might not be the opinion of all sonographers; and this itself is a critical issue when considering occupational leadership in ultrasound.

All participants clearly felt that ultrasound managers needed to be more proactive in encouraging sonographers to be more receptive to change.

> "*that actually the workplace as in the employers have a big role in securing the future of sonography because that secures their own future to provide a service*" (participant K)

However, this was deemed a challenge as participants felt that most managers were struggling to juggle the work pressures.

> *"they're focussed on well this month I've got these many patients, I've got these many slots and it doesn't match – how do I fill this. And they're living day to day " (participant K)*

Furthermore, two participants (not ultrasound department managers) indicated that they felt some ultrasound managers may not have the required leadership skills.

> *"I think it's the department manager, it needs to be that person who has that mix of management skills and clinical skills …….and I know a lot of people where you ask the superintendent sonographer - well I was the only one who applied to do the role I've been doing it 20 years so they're not necessarily forward thinking" (participant D)*

> *"lack of foresight of managers" (participant L)*

4.3 Phase 2: Findings

Sonography Culture was interpreted to be the overarching theme of phase 2 of the study that sought to meet aims 2 and 3. The exploration of the participants' understanding of their working world provided an insight into the possible causative factors for their attitudes and perceptions towards introducing a graduate sonographer and implementing change to the sonography career structure. These perceptions were tested against realities identified by the participants of their working world; this helped the researcher to develop a new understanding of how sonographer occupational culture influenced the participant's attitudes and beliefs (and ultimately behaviour) towards implementing change.

The main themes of power, protectionism, the working world and career frameworks provided further clarification of the participants' interpretation of the culture of sonography and how this influenced their behaviour towards change. Similarities amongst themes and subthemes in phase 1 and phase 2 of the study were acknowledged and interpreted to suggest a link between the working world and the formation of attitudes and beliefs of an occupational culture.

Once again, the themes and subthemes were linked horizontally and vertically as depicted in Figure 3. Power was created by the environment of the working world and this position of power was fiercely protected. Career frameworks were heavily relied on within the working world, providing not only a mechanism by which characteristics of an occupational identity could be articulated, but also a hierarchy that was fiercely protected.

Intertwined subthemes of value, status, professional identity and workforce provided contextualisation of where power and protectionism were rooted. During the analysis of the interview narratives for phase 2 the researcher became aware of the complexities within sonography culture through the participant's eyes which provided a deeper understanding of how this had influenced their attitudes and opinions towards implementing change.
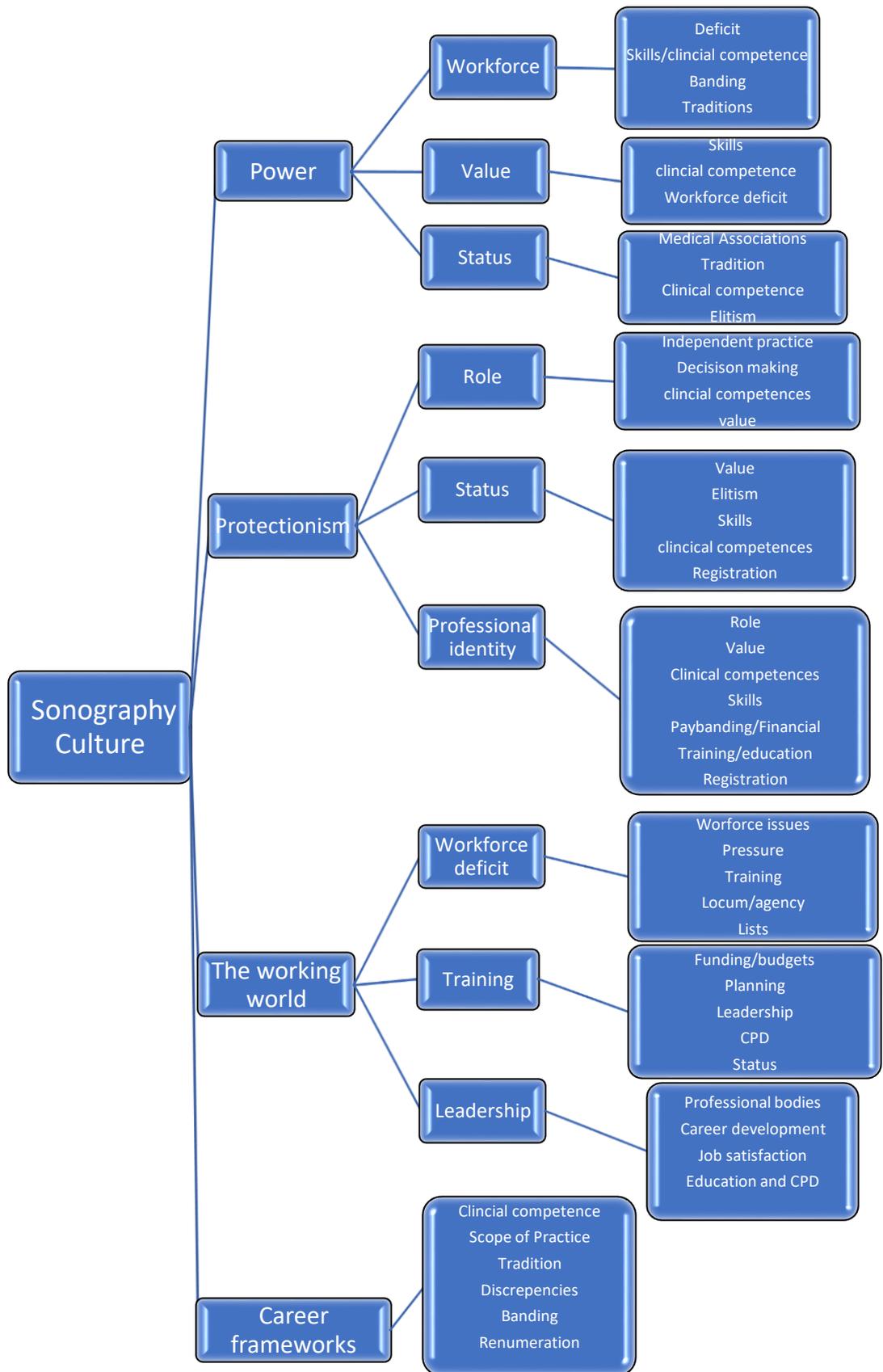
Figure 3: Phase 2 Coding Diagram

4.3.1 Power

Workforce, value and status were interpreted to be subthemes that underpinned the main theme of power. Workforce deficits, and the value placed on the sonographer skills, were perceived by the participants to have placed them in a position of power which gave them an elite status within the organisation and health community.

> *"sonographers as a profession are very powerful" (participant F)*

> *"a small profession who at the moment are in an environment where people can pick and choose their roles and their jobs and get paid and awful lot of money" (participant B).*

> *"**they** are a force to be reckoned with...I think **we** think **we** are better than everyone else" (participant D)*

> *"it's like oh well you won't give **us** what **we** want **so we** are **all** going to leave and go to this department - **we are** going to do what **we** want and manipulate" (participant B).*

The supply of sonographers and the demands of service were described by the participants as being out of balance which had created an environment that had put the sonographers in a position of power. When analysing the data, it became apparent that the reality of the working world supported the suggestion that there was a workforce deficit, and this had influenced the participants' attitudes and perceptions of the sonography workforce. All participants acknowledged there was a pressure from a depleted staff workforce (even when some did not actually have a workforce deficit on paper but, due to sickness and maternity leave, they did).

> *"the number of referrals is going up and the number of staff is going down" (participant B).*

> *"I don't on paper, but I do in reality though - I've got a lot of sick and I've got maternity leave and so yeah but no on paper we are full" (participant C)*

Power (gained by value being placed on the clinical skills and status through the banding awarded because of associated clinical skills and competences) was linked within the subthemes by tradition. The participants identified that their status was mainly historical, achieved through delegation from the medical profession (radiologists).

> *"I think it comes from tradition" (participant D)*

> *"well maybe it's the radiologist we have to blame for all of this" (participant E)*

"a power thing, the younger radiologists are very happy to hand it over" – (participant H)

"they feel like they've given away some of their job which is the way radiologists used to feel one time with sonographers" (participant B).

There was a suggestion that sonographers had initially achieved their power status through occupational imperialism due to the radiologist workforce deficit. However, due to the sonographer workforce deficit and the reluctance of sonographers to delegate some of their clinical skills, it might be argued that this power base was garnered via a strategy of usurpation.

So gradually it's that spiral of – I guess it's just bullying and manipulating – it's like if you don't train me in this then I'll leave and if you don't train me in this I'll leave because they know there's that workforce deficit – they're in control" (participant D)

Undoubtedly the participant's perceptions were that the workforce deficit was key to placing sonographers in a very powerful position which was fiercely protected.

"I think being in a profession where there is a significant deficit regardless of what your profession is puts you in a strong position because you are not easily replaceable." (participant F)

"because they know there's that workforce deficit – they're in control" (participant D)

"because there's not many of us and there's a workforce deficit …we want to protect our profession and future proof our role really" (participant F)

4.3.2 Protectionism

Protectionism referred to the participants' desire to maintain and restrict access to practice. Protectionism within the working world was perceived by the participants to be linked to the professional role that provided their identity and in turn created a status for sonography within the health organisation.

*"people already feel defensive about **their** role"* (participant B).

*"ooo its tradition and its being protective of **their** profession"* (participant D)

Occupational protectionism was identified to have been developed over time through occupational and organisational culture and traditions.

"Cultural – errm I think there will be resistance" (participant A).

"…I think it will take time for that culture to change because people aren't very good at changing sometimes errm" (Participant B).

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The participants perceived the potential loss of value (through down banding and "dumbing down" of the clinical skills associated with professional identity of the sonographer) as the main reasons for a culture of protectionism within sonography. The researcher interpreted the participants' responses as the main drivers for protectionism, which typified a prevalent culture of fear and anxiety.

> *"Cultural - …at the moment it will be seen as dumbing down" (participant A).*
>
> *"it makes **them** feel even more threatened … I think **they** will be afraid that **they** will be banded down: (participant B).*
>
> *"there are a lot **of people** feeling threatened and that it's a way of undermining **them** and devaluing **them**" (Participant C)*
>
> *"I think there are all sorts of things that come into it but fear is a big thing" (participant D)*
>
> *"**everybody** feels threatened about being down-graded" (participant K)*

The protection of clinical skills already attained, and the participants' desire to develop sonographer clinical skills further as a means to protect their status, was interpreted to be a major driver of usurpation.

4.3.3 The Working World

The participants' perceptions of their working world provided great insight into the occupational community of sonography. The participants described the sonography demographics as mainly female and over 50 (supported by CfWI, 2017) which they felt were the main reasons for the workforce deficit: natural wastage mostly due to an ageing workforce and a lack of succession planning for training had led to insufficient sonographers to meet an increasing demand.

> *"and errm also if you look at the workforce they are nearly all women… a large proportion of them will be coming up for retirement in the next few years and another proportion are you know having families and wanting to reduce their working hours". (participant B).*
>
> *"...now having families and wanting to reduce their working hours". (participant B).*
>
> *"in the past probably 18 months we've seen the matriarchs of ultrasound actually getting to retirement age so there is a lot of sonographers who are trained who are between the ages of 50 and 60 who are able to leave" (participant F)*

4.3.3.a Workforce deficit

In order to develop an understanding of the impact of the workforce deficit on the working world of the sonographer the participants were invited to describe their normal working week with regards to workload and pressures. Most agreed that the workload in the week, whilst manageable, did create an environment of pressure and stress.

> *"everybody is under more and more pressure and more stressed and it makes the working environment less pleasant" (participant B).*

Amongst the participants there was a heightened awareness of not meeting waiting list targets due to a lack of sonographers within the department. This was reported by the participants to have created a culture of negativity amongst the workforce as the perception was that sonographers felt unappreciated for how hard they were working.

> *"how hard everyone works then you don't feel appreciated basically" (participant J)*

All participants mentioned locum sonographers during the questioning about their working world; some suggested locum agencies lured NHS staff away with greater financial benefits, thus holding them responsible for the workforce deficit.

> *I also think the high agency rate that agency sonographers are receiving has attracted people from NHS to agency ..."(participant A).*

> *"it's too attractive for the people that do work to be lured by agency rates and they can pick and choose they're hours errrm we've just gone to a 7day working week so we are now having to work Saturdays and Sundays whether we want to or not - the agency staff don't have that they get paid enough during the week so more and more staff are going to do agency because they get paid so much more and they can pick and choose what they want" (Participant D)*

> *"the fact that there is so much agency work which pays ridiculous sums per hour means that they are turning from the NHS" (participant B).*

However, this same participant then contradicted themselves suggesting that the sonographers didn't leave but altered their working flexibility outside of their contracted hours.

> *Interviewer: "Have you had any staff members leave to become a locum or do they usually do it alongside their NHS contract?"*

> *"they usually do it alongside so what we have is where we would have had part-timers be willing to come in on their days off or weekends are being attracted to elsewhere on agency rates cos its much higher pay." (participant B).*

Conversely some participants indicated that, without this locum workforce, the

NHS departments would not be able to survive

> *"We cannot survive without the locums now with our staff levels we just can't"*
> *(participant K)*

This juxtaposition of the participant's perception that locum agencies were responsible for the depleted workforce (a manager and lead sonographer view point) and yet without them the service could not survive (an advanced practitioner view point) was (in the researcher's opinion) an interesting concept worthy of further exploration.

Participants who suggested that the locum workforce was a causative factor behind the sonographer deficit also reported that (in their experience) either none or only one sonographer had left substantive sonographer posts to become a locum sonographer in their departments.

> *Interviewer: "Have you had any staff leave to do locum work?"*
> *"no" (participant C)*
>
> *Interviewer: "Have you had anybody leave to be a locum sonographer?"*
> *Participant: "yes, yes one person has" (participant K)*
>
> *"the majority of the locum workers I've met are not from the UK - most of the locum workers are people who have come over from errm - well there's a few Americans but it's mostly Australians and a couple of Canadians" (Participant J)*
>
> *we don't have any locums now currently" (participant J)*
>
> *Interviewer: "So you don't use locum agency or bank?*
> *" no" (participant C).*

Inconsistencies amongst the participants, concerning their perception of locum agencies and their impact on the workforce deficit, indicated multiple realities within the perceptions of the participants. These realities could be interpreted to suggest that some of the participant sonographers had embellished on the locum situation to create a perception of an ultrasound service in crisis thereby protecting their position of power. However, it could also be interpreted that the workforce deficit and high reliance on locum staff were local challenges, not national.

The interview data suggested that, whilst locum agency suppliers of sonographers had reduced the flexibility of the NHS staffing, they were not solely responsible for sonographers leaving the occupation; thereby not the

cause but the result of the workforce deficit.

4.3.3.b Training and education

Training and education were identified by the participants (not just those that were from an education background) to be at the heart of the sonographer workforce crisis. Historically, sonographers were recruited from the radiography profession, which itself was in crisis, and sponsored from the training budgets held by the radiology managers. The financial cutbacks that health care had experienced over the last decade were perceived to have had a negative effect on the sponsorship of education and that this lack of training was the main reason for the workforce crisis.

> *"I mean historically it's through training budgets being eroded eventually down to nothing, so we have a whole generation of sonographers are missing" (Participant F)*

The sonography profession recruited from the nurse and midwifery professions as a response to the need to increase sonographer numbers. However, the participants were adamant that training was insufficient and was the reason why the workforce was in crisis; although others such as workload pressures, staff morale and lack of manager support were also identified as reasons for the lack of training.

> *"think partly we are not training" (Participant D)*

> *"think we haven't trained enough - I think not enough training has been taking place I think because of the pressures on the working environment has crept up and people have been reluctant to press students on as much as they can also I think there's been a reluctance in some areas for radiology services managers to release radiographers because they are going to be short of radiographers" (Participant A).*

Participants believed training and education was also an issue post qualification. The facility for qualified sonographers to develop and advance their skills was limited by a lack of foresight and leadership by the management.

> *"one of the reasons he cited for leaving as well was that he didn't feel like they were prepared to support him to develop any more than he already was" (participant K)*

This lack of support for development could also be seen as a contributory factor to the resistance sonographers had towards relinquishing some of their clinical skills to lower grade sonographers; not only protecting their value status but also a lack of trust in the suggestions that the introduction of a lower grade

sonographer would provide them with an opportunity to develop advanced clinical skills. However, this opinion was not unanimous.

> *"I still have more career opportunities right here - there are things I'm allowed to do here that I'm not allowed to do in the ..." (Participant J)*

4.3.3.c Leadership

A change to working practices, to meet the rising workload, was also perceived to have had negative impact on the sonographer workforce. Pressure to undertake weekend and evening work to meet waiting list targets was perceived to have created a challenging relationship between management and the workforce that lacked leadership, trust and understanding on both sides.

> *"we are not allowed to breach - (awkward laughter) there is the assumed expectation that we will work extra and that if we are close to breaching someone will do an extra list in the evening or a Saturday or a Sunday to get that - so it doesn't breach. Errrm its quite difficult to say no to those extra lists errm you're under the pressure of the implications of breaching - I know a lot of staff don't particularly want to be doing the evenings or the weekends but they are sort of told they have to, to keep waiting lists down." (participant D)*

> *"for them to insist that Christmas day is covered by a staff member on site….it still rankles that was 2 years ago and it still annoys everybody because it was so unnecessary you know … Out of how hard everyone works then you don't feel appreciated basically" (participant K).*

This lack of trust was also demonstrated when participants considered the reasons for implementing a change in the workforce and the introduction of graduate sonographers; this was highlighted with the belief that the main driver for this new clinical competence and career framework was financial rather than an altruistic concern for improving patient care.

> *"Sonographers are very short on the ground and its very expensive to train a sonographer errm so I think looking at the profession from a different perspective and looking at it with a fine-tooth comb I think there will be options of financial savings that may not have a direct impact on patient care and safety" (Participant F)*

Lack of leadership was also perceived to be from, not just ultrasound management, but also from the professional bodies. The failure to gain professional registration and recognition was perceived to be a demonstration of devaluing sonography.

> *"They don't recognize ultrasound as a career… that's the ultimate…it's not even recognized by the bigwigs…that's partly at the root of it that ultrasound isn't valued as much as it ought to be". (participant K).*

4.4 Career Frameworks

Career frameworks were identified as a main theme in phase 2 of the study as they were interpreted to be the key to understanding the culture within the working world of sonography. Career frameworks embodied tradition, scope of practice, clinical competence and banding as well as discrepancies with how they were manipulated and implemented. Career frameworks (whilst argued to provide structure and facilitate progression from the perceptions and opinions within the narratives) were not fit for purpose with regards to articulating sonography as a career.

> *"I mean the things we still use is the agenda for change which is completely out of date and never were set up properly for sonographers in my view." (participant A).*

> Interviewer: "So the frameworks we've got"
> Participant: "Don't work for ultrasound" (participant B*).*

The researcher interpreted the participants' perceptions of how frameworks were interpreted and implemented by managers as providing a vessel for sonographers to increase their position of power within the organisation.

> *…because what it does is that people especially in a climate where we've got a 20% shortage errr people, sonographers will look for the ones – you know have got the better banding even though the actual job is no different – we've got it with 8a around the corner for example for sonographers that aren't doing a different role to the band 7 sonographers – if clinical competence - if clinical competence were attached to the role there would be clear demarcation and there is none. (participant A).*

4.5 Conclusion

The findings of phase one and two of this study provided insights into the working world of the sonographer, including an understanding of why sonography was deemed by the participants to be a powerful occupation and how high levels of protectionism, through the reluctance to identify clinical competences for lower grades of sonographers, had underpinned this position of power.

It was acknowledged that the participants were aware of political and fiscal drivers for change and demonstrated a cynical view of the possible incentives. It

was evident from the strength of the responses that there was a very strong emotive driver behind the participants' beliefs about why they thought sonographers were resistant to change; with fear and anxiety being at the forefront of their rationale.

4.6 Summary of Chapter 4

The results from the interview data were analyzed from which themes were identified. The overarching themes in both phase 1 and 2 (Implementing Change and Sonography Culture) provided robust linkage of the main themes within each phase that met the aims for the research question. The core themes identified across both phases were power, protectionism, professional identity, career frameworks and the working world.   Interwoven within the core themes were subthemes. The subthemes provided cohesion to the complexity of the interview data as well as demonstrating the intricacies within the research data.

Power and protectionism were identified to be reliant on one another. Power was seen to be devolved from the medical profession along with the delegation of the ultrasound clinical competences through the mechanism of occupational imperialism. Clinical competences were identified as a key tool/mechanism to establish and maintain power and enable occupational protectionism. Occupational protectionism was mainly demonstrated through the resistance to delegate sonographer clinical competences; indicating power within sonography was probably established through the mechanism of usurpation. Power was closely linked to a valued status within the organizational hierarchy; being a highly skilled occupation whose clinical skills were in scarce supply with high demand.

The researcher interpreted fear and anxiety to be the main negative emotional elements that fueled the desire for sonographers to protect their occupational standing. Fear and anxiety were linked mainly to being down-banded and devalued as an occupation. Whilst an element of financial loss was linked to the fear of being down-banded, it was evident that pride and the desire for their clinical skills to be acknowledged and recognized (essentially valued) as having an important contribution to the organization were the main drivers for protectionism.

Protectionism was not only demonstrated outwardly, from the collective of sonographers, but also inwardly amongst the multiple professions that co-exist under the umbrella of ultrasound practice. Discrepancies with the interpretation and implementation of career frameworks within the health organization, from which grading/banding of levels of practitioner were derived, were suggested to reinforce a professional jealousy and protectionism.

A lack of leadership, at both national and ultrasound department levels, was consistently argued to be the root cause for the lack of direction within sonography with regards to education and training, career frameworks and clinical progression.   Sonography not being a recognized profession was indicated to be a primary factor for the lack of leadership; no professional ownership of sonography practice due to it being multi-professional added to the feeling of vulnerability and increased the level of protectionism.

Chapter Five

Discussion

5.1 Introduction

The purpose of this chapter was to correlate the findings from relevant literature and the analysis of the interview data from phase 1 and 2 of the project to provide a cohesive and progressive discussion. The discussion aimed to answer the research question

> **"What are the individual attitudes and opinions of sonographers towards the role of the graduate sonographer?"**

and thereby investigated the research study aims to explore:

1. The attitudes, values and opinions of the participants toward the role of a graduate sonographer
2. The participant's views of their working world
3. The culture of sonography and its influence when implementing change in education and career frameworks.

The focus of the discussion was to explore the themes relevant to sonographer culture and how this had influenced the collective opinion towards implementation of change, with particular reference to the introduction of the graduate sonographer to the workforce. The discussion was grounded within the interpretations of the research data that provided an insight into the emotive, political and fiscal drivers that were interpreted to influence the participant sonographers' attitudes and opinions. The participants' responses were, in the main, in agreement irrespective of role or professional background. However, there were two discordant opinions raised in the participants' narratives which will be discussed later in the chapter.

The discussion was divided into four sections that reflected the journey of the research project:

- ❖ Clinical Competence and the role of the graduate sonographer: Attitudes and opinions
- ❖ Working World of Sonography

❖ Sonography Culture: Power and Protectionism

❖ Implementing change.

5.2 Clinical Competence and the role of the graduate sonographer: Attitudes and Opinions

The participants' attitudes and opinions towards the concept of clinical competence and defining clinical roles provided the platform for the exploration of the culture of sonography and to create insights as to where resistance to change was rooted. Clinical competence, outlined in professional standards and frameworks, was used to articulate and define clinical practice at specific levels and yet the concept of clinical competence was poorly defined both in the literature and by the participants. This confusion was not unique to ultrasound; nursing and the medical profession were also identified as lacking agreement concerning the definition of competence suggesting it to be an ambiguous concept (Cowan *et al.,* 2007; Epstein & Hundert, 2002; Gardener *et al.,* 2006).

However, whilst there was evidence of confusion over the concept of clinical competence amongst the participants, the articulation of clinical competence and the differentiation between competence and competency was argued to be essential to the development of the scope of professional practice and the determination of professional identity (Butler, 2006; Cowan et al., 2007; Turrill. 2014). All of the participants were of the opinion that clinical competence and clinical role were intertwined as supported by Andrist and Schroedter (2001). The participants believed that clinical role was determined by the clinical competence of the individual and was therefore the key to the articulation of the scope of practice for each grade of professional.

When asked to explore clinical competence for the graduate sonographer, in phase 1 of the study, the majority of the participants expressed extremely negative attitudes and opinions towards the graduate sonographer, indicating a collective resistance to the role. An overall reluctance to identify any clinical competences that could be delegated and would define the role further

cemented the interpretation that the concept of the graduate sonographer was not supported by the participants.   Furthermore, any attempt by the participants to define the role of the graduate sonographer was, in the main, negative, with emphasis mainly placed on what the graduate sonographer would not be able to do.

Chiarella *et al.* (2010) argued that clinical competence standards provided status within the professional hierarchy; this status was very much dependent on the perceived value of the associated clinical skills to the organisation and society. The demarcation of clinical competence was argued to underpin a culture of professional *ring fencing* (protectionism) that maintained professional identity and ultimately professional status (Frenk *et al.*, 2010; Timmons & East, 2011). Professional *ring fencing* was demonstrated by the participants in their reluctance to identify clinical competences for a graduate sonographer in a desire to maintain their status and value and ultimately position of power.

Beales *et al.*, (2011) suggested that professional power and control were directly related to the value placed on clinical competences and this value was determined by the demand for these clinical skills. The higher the demand for clinical skills that were only obtainable from a closed occupational group the greater the position of power and control to influence or resist change; clinical competence provided a vessel of monopoly through which an occupational group maintained their status and power. Therefore, the participants' refusal to identify sonographer clinical competences maintained the monopoly over those clinical skills that could be delegated to a graduate sonographer; thus, suggestive of a desire to protect the sonographer community's perceived position of status and power.

The negativity towards the role of the graduate sonographer was also expressed by the collective opinion that this grade of sonographer would not be employable due to the lack of professional registration, which in turn negated the need to identify clinical competences and roles for a graduate sonographer. It was the opinion of one participant that if clinical departments were not prepared to employ graduate sonographers then it would be unfair to train

them. This was interpreted to suggest that the perception was that clinical departments had the power to resist and, ultimately, block graduate sonographer training.

Over the last 20 years the lack of sonographer registration had been consistently used as a rationale to resist the introduction of a graduate sonographer, thus protecting the status of sonography. Thomson (2009) (writing on behalf of the SCoR) challenged the perspective concerning registration being a barrier to developing the role of a graduate sonographer and yet (as demonstrated in the participants' narratives) there remained a perspective that the lack of professional registration was a formidable barrier. The lack of professional registration was being used by the study participants to justify the resistance towards the introduction of a graduate sonographer role; a potential method of protectionism.

The negative attitudes and opinions of the participants towards the implementation of a lower grade sonographer were arguably underpinned by emotional factors such as fear, anxiety and jealousy; all of which were linked to the perceived loss of value. The overwhelming perception of the participants feeling threatened by the proposed graduate sonographer role was indicated in all of the interview narratives, irrespective of participant role. The participants believed that the sonographer community felt that the clinical skills of sonographers would be devalued and that there was a fear of being down-graded.

These fears toward the introduction of the graduate sonographer role were consistently referred to by the participants. Fear was believed to have created a high level of anxiety amongst the sonographer community; this perception of anxiety could arguably be the root cause for the negativity expressed by the participants toward the role of the graduate sonographer. Negative emotional drivers are argued to be closely associated with the behaviour characteristic of resistance (Descombre *et al.*, 2006; Ward, 2006). Davies *et al.,* (2000) and Hall, (2005) both agreed that emotional drivers within the sonography workforce were highly influential over behaviour and that in order to reduce resistance

they needed to be acknowledged and addressed before any steps forward with the development of a new clinical and career structure could be made.

Whilst participants within the study were sceptical about the reasons for the implementation of a graduate sonographer, suggesting that it was financially driven rather than for service improvement and sonographer development, the participants' fears of being down-graded were associated with a perceived loss of status that was linked to the higher banding rather than with the financial loss that would inevitably come with being down-graded. The emotional aspect of the participants' fear was greatly influential over the resistant behaviour exhibited and thereby supported suggestions that the emotional drivers of a professional group were significant when trying to implement change (Davies *et al.,* 2000; Hall 2005). The participants' behaviour of collective reluctance to identify and delegate clinical competences to a lower grade graduate sonographer was indicative of trying to create a skills monopoly and thereby reduce the threat to their value status. Nancarrow and Borthwick (2005) argued that occupational monopoly provided safety to the occupational community and a platform for protectionism.

The participants' responses and literature indicated to the researcher that there was a need to challenge the clinical competence monopoly in a way that reduced the emotional aspect of the fear of being devalued and losing status. This indicated a need to critically evaluate the way clinical competence was articulated and used in order to develop a structure for defining practice that acknowledged the differing levels of skill from a graduate to an advanced practice sonographer. Acknowledgement of the skills hierarchy would ensure the maintenance of the value and status associated with advanced ultrasound practice that was so fiercely defended through the use of resistance.

5.2.1 Clinical Competence and Capability

Whilst clinical competences were agreed to provide the cornerstone for defining clinical roles there was some dispute as to the appropriateness of the use of core clinical competences for defining the scope of practice of health professionals above entry level to the profession as a practitioner (usually

graduate level) (Cowan *et al.*, 2007; O'Connell, 2014). At the time of writing, sonographers normally entered as an advanced practitioner, thereby suggesting that defining the scope of practice of sonographers using core clinical competences was not appropriate. The argument that competency was perhaps not appropriate to define practice above graduate/entry level was supported by one participant.

> *"I think there is a difference between assessing competency and assessing excellent practice… if I was assessing someone who is … an advanced practitioner I would be looking for them to be an expert in their field" (Participant C).*

Suggestions that capability was more appropriate for defining advanced practice were fully endorsed by Benner's (1984) work that explored the continuum of novice to expert practitioner. Career frameworks consistently used competences as a measure of clinical practice, however, if a complete career framework for sonography was to be developed then the debate for using competence and capability to illustrate a hierarchy of clinical skills would be justified. The increasing value and status created by the hierarchy of clinical skills could potentially reduce the fear of professional loss that reinforced the protectionism associated with the demarcation of clinical competences.

Clinical competence and capability were argued to share the same foundations whilst also forming part of a transformative continuum (Cowan *et al.,* 2007; O'Connell, 2014). The concept of the continuum of progression from competent to capable practitioner was introduced by Benner (1984) who suggested that there were important differences between a novice practitioner who was newly registered (graduate) and an advanced practitioner especially when defining competence. The hierarchy of clinical competence was supported by O'Connell (2014) who suggested that competences by their very nature were prescriptive and not relevant to advanced practice where the complexities of clinical practice were not addressed. The complexity found within sonographer advanced practice roles could explain why the participant sonographers found it difficult (rather than resistant) to breakdown clinical competences that a lower grade could undertake and was therefore not necessarily a mechanism of protectionism.

Sonographers (at the time of writing) in their practice continuum, did not enter at graduate level where threshold competences were argued to more accurately define the clinical role (Chiarella *et al.,* 2008; Southgate *et al.,* 2001). Evidence from literature and the research findings suggested that on the whole sonographers entered sonography at advanced practitioner level (band 7 grading with some graded at band 6 when scope of practice was limited to one area of ultrasound speciality) (Parker & Harrison, 2015; Parker & Wolstenhulme, 2012). The grading, at point of qualification as a sonographer, could be argued (using the Dreyfus model) to be inappropriate; newly qualified sonographers were novice practitioners by definition and so could not start their sonographer career as true advanced practitioners. This supports the participants' perspective that the career frameworks used to define sonographer practice were not fit for purpose.

Clinical competences, as previously alluded to, were commonly used to map clinical roles and scope of practice within frameworks across a range of levels of performance within health care (Verma *et el.,* 2005). The research findings suggested that, although there were many clinical competence frameworks cited by the participants and used within health care, the participants all agreed there was not (at the time of writing) a clinical competence framework dedicated to defining and mapping the sonographer role.

The Dreyfus model (used by Benner (1984)) created an inclusive framework that acknowledged the range of scope of practice within an occupation, which arguably created a sense of increasing value and status to each level of practitioner. This was interpreted by the researcher to suggest that a career framework for sonography using competence to determine the scope of practice for the graduate sonographer (point of entry to sonography) and capability for the scope of practice of existing advanced practice sonographers (thus recognising the increasing complexity and value of the clinical skills), had the potential to reduce the resistance exhibited (due to reducing the fear of being de-valued) toward the role of the graduate sonographer.

The evidence collated from literature and the participants' narratives suggested that, at the time of writing, although there were clinical competences articulated for advanced practice sonography, (band 7) the participants' opinion was that there was no appetite to develop competences for a lower grade sonographer. Whether this lack of appetite was a demonstration of professional protectionism or that the task was too complex, was unclear. Turrill (2014) suggested that the lack of a sonographer career framework outlining expected clinical competences across the different levels was one of the contributing factors for sonography not currently being a recognized profession and thus made sonography more vulnerable to encroachment rather than protecting its status.

The researcher continued to explore the participant's perceptions of their working world of sonography in order to provide a greater understanding as to why the negative attitudes and opinions towards the graduate sonographer role were so strong.

5.3 The Working World of Sonography

The exploration of the participants' attitudes and opinions towards the work environment created opportunities to evaluate possible causative factors, within the workplace, for the lack of enthusiasm towards the development of a career structure and change to educational practices in sonography over the last two decades.

5.3.1 Work pressures

Within sonography it was noted, by the Centre for Workforce Intelligence (2012 & 2017), that the supply of sonographers had decreased to crisis point with some regions indicating vacancy rates as high as 20% (HEEM, 2014) and the demand for ultrasound skills had increased exponentially, thereby placing the competences associated with sonography as highly valued (Parker & Harrison, 2015). It could be argued that the workforce shortage should have encouraged the sonographer community to explore options to improve the workforce supply however the opposite was evident with resistance. The supply and demand imbalance placed sonographers in a position of power to influence and resist

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change in working practices (Beales *et al.,* 2011); a situation the participants were fully aware of, which was cited consistently across all of the interviews and was potentially the underlying reason for the lack of appetite to actively resolve the workforce crisis.

When exploring what the participants thought had caused or exacerbated the workforce crisis in sonography all but one of the participants cited locum agencies as the main cause for a depleted sonographer workforce. It was suggested by the participants that sonographers were leaving their substantive posts to undertake agency work that was much higher paid. In a study by Waring *et al.,* (2015) it was indicated that of the twenty departments surveyed, from the North-West region, 90% had a vacancy and that 75% employed locum agency sonographers which would support the participants' beliefs concerning the impact of agency provision of locum sonographers on the workforce.

However, the interview narratives, on further exploration, went on to contradict their initial opinions suggesting that locum sonographer opportunities in reality did not have a significant bearing on the workforce. Only one participant stated that a sonographer had left their substantive post and one participant indicated that a student on completion of training left the training department to become a locum sonographer; other participants indicated that they did not know of anyone who had left the health service to become a locum sonographer. One participant, who had been a locum sonographer, suggested that, in her opinion, most locum sonographers came from overseas such as America and Australia and so did not deplete the UK sonographer pool. Furthermore, two of the participants suggested that, in their opinion, those who did undertake locum sonographer employment did so as an addition to their part-time substantive employment. Arguably part-time staff choosing to undertake locum sonography employment, rather than undertaking extra shifts at the substantive employing department, did reduce their flexibility, but it did not actually deplete the department's existing employed workforce.

The findings of this research did not fully support the participant's initial opinions that locum agency sonographer employment had caused significant impact on

the workforce deficit. It was evident, however, that the locum sonographer workforce was "plugging a gap" in the workforce. The researcher interpreted this to suggest that the increase in locum sonographers was not the cause of the workforce deficit but was as a result of the workforce deficit. This indicated the possibility that other factors were more influential in creating the workforce deficit.

The researcher was interested as to why the participants had initially embellished the impact locum sonographers had on the workforce, thereby creating an illusion that locum agencies were the main contributors to the crisis. Weick, Sutcliffe, and Obstfeld (2005) argued that in times of uncertainty the individual, in order to make sense of their world, created/invented the most likely predication of what had occurred rather than discovering the reality (interpretations of their world were driven by plausibility rather than accuracy). This argument would suggest that, whilst the participants' perceived increase in the use of locum sonographers was the most plausible cause for a depleted workforce, it was not necessarily an accurate interpretation of the real world; that being the increase in locum opportunities was as a result of the deficit not a cause.

It was noted from the review of the literature and the latest CfWI report (2017) that the main factors for the workforce crisis were identified as an ageing workforce and a lack of training of new sonographers which was supported by Parker and Harrison (2015) and Waring *et al.,* (2015). The participants were also of the opinion that these two factors were also major causes of the workforce shortage. Supporting the participants' opinions concerning the cause for the workforce deficit, BMUS (2003) suggested that a lack in sonographer training was the main cause for not keeping up with the natural wastage of sonographers and the increased service demand. The participants believed a lack of forward planning and leadership were key reasons why there had been a lack of training along with financial, workload and staff morale pressures. It was also considered that the lack of training was not just focussed on new sonographers but also there was an indication of a lack of commitment for the training of established sonographers in the advancement of their skills with one

participant (from a management perspective) indicating that education beyond minimum requirements was not a high priority.

The lack of foresight to continue with training post-qualification could be argued to" fuel the fire" of protectionism amongst established sonographers due to a perceived threat of being out-dated and restricted in their practice. The participants' perceptions of a lack of investment for the development of the existing workforce could be argued to have increased their feelings of insecurity and resistance to the delegation of clinical skills to lower grade sonographers. Furthermore, the lack of opportunity for continued professional development amongst established sonographers could be argued to have encouraged a growing cynicism toward the suggestions that the introduction of band 5 and 6 sonographers would free them to develop their skills into more complex areas of ultrasound   This argument was supported by the interview narratives with only one participant having the opinion that a lower grade sonographer would enable them to develop more advanced clinical skills.

The respondents' perceptions that there was a lack of opportunity to advance their sonography practice could be argued to be a causative factor for the increased protectionism and a reluctance to delegate clinical skills to a lower grade sonographer, thereby arguably a significant reason why sonography had not (at the point of writing) developed its own career structure.

5.3.2 Career Frameworks

The participants, when describing their working world, cited the lack of a dedicated sonographer career framework as being one of the main challenges for the workforce. Whilst it had been argued that a career framework needed to be non-prescriptive and flexible to reflect the changing context of service demands (SCoR, 2013), it was the flexibility and interpretive nature of the frameworks adopted by sonographers that were cited as the main cause for them being divisive; creating negativity and professional jealousy between sonographers as well as enabling them to manipulate the frameworks for higher banding in regions where there were significant sonographer shortages.

Furthermore, a multiplicity of career and clinical competence frameworks in operation created a complex and often contradictory description of working practices (DoH, 2011; KSF, 2006; SCoR, 2013; Agenda for Change, 2004). Mapping sonographic roles to a range of non-ultrasound specific frameworks was argued by the participants to have created a lack of standardization in implementation that had been exploited by the depleted workforce for increased status and pay remuneration.

The participants were most familiar with the Agenda for Change (2004) banding framework and the SCoR four-tier model. Both frameworks aimed to create a more standardized approach to grading of practice and the definition of clinical roles and scope of practice. However, the research findings refuted the opinion that frameworks provided standardization; professional groups such as nursing and radiography interpreted the clinical role of sonography differently and applied different bandings for the same role (Parker & Wolstenhulme, 2012). It was argued by the participants that frameworks, whilst creating the illusion of standardization, did not actually do this at all; the perception was that they reinforced professional jealousies and protectionism between professionals and professional groups due to discrepancies in how they were applied. They also felt that frameworks were open to manipulation to address workforce deficits by attracting sonographers with higher bandings for the same clinical role.

Whilst the four-tier model and Agenda for Change were adopted by service providers, the participants argued that they were irrelevant to sonography. Most sonographers were graded band 7 (advanced practitioner) with a few sonographers (mainly midwives) employed at band 6 due to the limited scope of practice; anecdotally there had been an increase in awarding band 8 to sonographers (even though they were not in a consultant sonographer or management role) to attract and retain staff; the lower band 4 (assistant practitioner) and band 5 (practitioner roles) in the frameworks were redundant within the main provision of ultrasound services. The research findings suggested that a single UK national sonographer clinical competence framework was required to redress the discrepancies and lack of consistency

that encouraged professional protectionism and jealousy amongst professions and within sonography itself.

The Dreyfus Skills Acquisition model, as previously indicated, was argued to support the continuum of practice from competent to capable practitioner more effectively than a competence only framework (Benner, 1984; O'Connell, 2014). Using this model an advanced practice sonographer (band 7), using capability as a measure, would be at the proficient level of practice and a consultant sonographer (band 8) would be at expert level, thus reducing the facility to revise bandings to attract sonographers to fill vacancy gaps. The researcher suggests that using this model has the potential to reduce the flexibility of interpretation that was cited by the participants to cause inconsistencies in the banding of existing sonography roles. Furthermore, threshold competence indicators could be used to measure performance for band 6 sonographers (competent level) and band 5 sonographers (advanced beginner) creating a complete and progressive framework for sonographers that would recognize value for increasing skill acquisition and create a structure that explicitly defined the occupational community of sonography.

5.3.3 Profession Versus Occupation: recognition and registration

There was evidence, from the participants within this study and within the review of the literature, that the issue of sonography not being recognized as a discrete professional group at the time of writing, had influenced many of the emotive and political decisions with regards to considering the implementation of change to the structure, working practice and education of sonographers over the years. Evidence from the participant data suggested that professional status through registration for sonographers was a valued concept, especially amongst the participants who were from a radiographer background, as it was perceived to provide recognition of sonographers' contribution to health care through their knowledge and clinical skills. It could be argued that this fact alone had predisposed sonographers to adopt a high level of protectionism toward their clinical practice due to a perceived vulnerability associated with a lack of professional recognition for their occupational community.

Participants, who were radiographers, indicated they wanted to be able to register as a sonographer with the HCPC; they perceived this as an acknowledgement of their clinical skills and knowledge. Morgan (2014) and Wright and Reeves (2016) suggested that licensure or credentialing of practice through registration enhanced a sense of professional elitism through the exertion of authority over who was eligible to practice. This was evident in the participant responses that suggested they felt sonographer registration provided protection from untrained professionals undertaking sonographic examinations thereby exerting control over their working practice.

The drive for sonographer registration was not interpreted to be as strong amongst the nurse or midwife participants; neither of the participants in this study that were not from a radiography background (n=2) suggested that professional registration of sonographers was something they thought necessary. The lack of motivation toward sonographer registration from the midwife and nurse participants may be underpinned by their fear of diluting their own primary professional identity; the potential blurring of professional identities with the more dominant professional group of radiographers (as could possibly occur with HCPC registration) would be threatening to the less dominant professional groups practicing ultrasound.

The challenges of multiple professions undertaking sonography were suggested by Lee and Paterson (2004) as being a barrier to finding the solution to sonographer registration as they created a complexity not found in uni-professional registration and this was highlighted by one participant in the study.   Participants, although indicating that sonographer registration leading to professional status was needed to secure the practice of sonography and protect against encroachment, indicated that the lack of registration was also a considerable barrier to employing graduate sonographers.

Whilst it was argued that licensure demarcated occupational practice and was instrumental in occupational "gate-keeping" (Timmons & East, 2011) the lack of it could also be used as a method of closure and protectionism over occupational territory (Morgan, 2014). It could be argued that, in the desire to

protect the band 7 status of sonographers, the lack of primary professional registration for sonography provided a safeguard for sonographers to resist implementation of lower bandings and control working practices, thereby preserving their status within the organisation (Morgan, 2014).

However, Currie *et al.,* (2009) suggested that closure of practice (as seen by using non-registration as a barrier) through the lack of delegating lower skilled tasks (clinical competences) could be detrimental to the development of the occupation; restricting its practice and thereby making it more vulnerable to encroachment.   This would suggest that the sustainability and progression of sonography was dependent on it being able to identify clinical competences that could be undertaken by lower grade sonographers. However, as indicated by the research findings this was a contentious concept.

The lack of professional recognition could be argued to have been the underpinning factor causing the occupational community of sonography to undertake a high level of social closure; closure of practice normally attained through registration was achieved through postgraduate education and a monopoly over the ultrasound clinical competences. (Parker & Wolstenhulme, 2012; Price, 2012). Cultural traditions and hierarchy were maintained within ultrasound by a process of exclusivity and occupational protectionism and yet sonographers were not acknowledged as a discrete professional group (Gibbs, 2013).

A lack of leadership was identified by six of the participants to be the underpinning reason why sonography (at the time of writing) had yet to achieve professional recognition as well as lacking innovation in the development of the occupation of sonography.

5.3.3.a Leadership

Whilst there was a perceived lack of leadership, indicated within the participants' narratives, from the professional bodies to provide guidance to educators, managers and practitioners with regards to how to develop a workforce this was not supported by the literature. The Society and College of

Radiographers (SCoR) (joined with UKAS and BMUS) and Health Education England (HEE) encouraged and supported innovative solutions, such as the BSc Ultrasound training programmes, that would help solve the workforce crisis. Furthermore, in 2007 the SCoR created a voluntary register for sonographers in its attempt to apply for professional recognition on the HCPC register.

The participants indicated that, whilst there was a need for the professional bodies such as BMUS, CASE and SCoR to provide leadership for sonographers, all agreed that ultrasound managers were key to leading the way regarding sonographer career development and implementing change. Within the literature the terms leadership and management were often used interchangeably. Mullins (2007) argued that, although these roles had a close relationship, there were some significant differences between them; a manager, having formal authority and responsibility, required good leadership skills to be effective, whilst a leader did not necessarily have to be in a position of management (Barr & Dowding, 2013). However, some of the participants suggested that, although the ultrasound managers should be leading the development of the occupation of sonographers, it was their perception that some ultrasound managers did not necessarily have the skills or motivation to effectively undertake this task (being more focused on managing the workload than leading sonography), contradicting Barr and Dowding's (2013) statement that effective managers had strong leadership qualities.

Barr and Dowding (2013) and Leithwood *et al.*, (2004) suggested that relationships between leaders and followers were key to effective leadership. The conflict managers faced between meeting service pressures and promoting staff relations was highlighted by the participants and, in their opinion, some ultrasound managers did not have the skills to lead sonographers in the development of a sustainable workforce.

It was argued that for sonography to become a recognized profession and implement innovative changes it required a cohesive, positive and enthusiastic group of individuals to work collaboratively irrespective of profession or

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occupational role (Chiarella *et al.*, 2008; Hall, 2005). It could be argued that this was part of the role of a Band 8 consultant practitioner and it was down to them to provide the much-needed leadership that would shape the future of sonography.

The multiplicity of professionals practicing sonography was indicated by three participants to be a causative factor for the lack of agreement on how to lead the profession and adopt new practices; this could be argued to be due to occupational territorial behaviour that was reinforced by strong affiliations to primary professional identities and thereby leading to a lack of ownership of sonography (Bate, 2000; Frenk *et al.,* 2010; Hall, 2005).   Chiarella *et al.*, (2008) further supported this perception suggesting that the protection of occupational territory encouraged rivalry and professional jealousy that inhibited collaborative working and reduced effective leadership.

To construct a deeper understanding of this issue it was critical to understand the culture within the specialty of sonography and how this had been strengthened by powerful associations and closure of practice. The exploration of the culture of sonography created a new understanding of the professional aspects of the sonographer. Whilst much had been documented about the sociological significance of sonographer clinical practice very little was understood about its occupational culture.

5.4 Sonography Culture: Power and Protectionism

The review of the literature indicated that within an organizational culture there were several sub-cultures (Bloor & Dawson, 1994). The culture and traditions of a professional or occupational group were argued to create the identities of each discrete group. However, where there was a dominant profession within an occupational group, as in sonography, it would ultimately prevail and control decision making, professional structure, education and development (Beales *et al.,* 2011).

Affiliation to, and preservation of, an occupational culture or sub-culture was closely associated with the value placed upon the characteristics that determined the professional identity of members of an occupational culture (Clouder, 2003). It was argued that the commonality/sharing of attitudes, values and behaviours amongst a group of individuals toward an occupation were used to define it and in turn created a professional culture (Evans, 2008; Rest & Narviez, 2009).

Culture determined the "norms" of behaviour and thereby professionalism / professional identity within an occupation (Evans, 2008). Professional identity, valued by the community, can be argued to be at the core of occupational/ professional protectionism. Professional identity is argued to be more complex when an individual has more than one occupational/professional identity (as found in sonography). The complex mix of professional cultures and primary identity allegiance within the occupation of sonography could be argued to be at the core of the lack of drive (other than from radiographers) to pursue sonographer professional status as this would lead to a dilution of the primary professional identities.

Professional identity characteristics, commonly cited, such as autonomy, accountability, integrity and knowledge were often used to justify control of an area of clinical practice (Evans, 2008). The characteristics outlined could be argued to be character traits of the professional rather than observable behaviours and were generic to all health professionals. The extent to which these character traits were performed, however, would define the status of the practitioner; for instance, a graduate sonographer, whilst they would be equally accountable, would not be practicing at the same level of autonomy as a consultant sonographer. This suggests a link between professional identity character traits and level of professional status within the organization. The fear of dilution of professional identity or status had a strong association with occupational protectionism which was evident in the research data with terms such as "*dumbing down*" and "*undermining"* being commonly cited by the participants in response to considering the role of the graduate sonographer (Chiarella *et al.,* 2008).

Sonography could be interpreted to be a sub-culture that grew within professional cultures (such as midwifery, physiotherapy, nursing and radiography) through specialization in the use of ultrasound as an imaging tool. The term specialism was argued to be the acquirement of an increased level of expertise in a specific area of practice that was associated with a recognized professional group (Nancarrow & Borthwick, 2005). This would suggest that sonographers did not have a discrete professional identity without affiliation to their primary profession and that sonography was indeed an occupational identity not a professional identity. The fact that sonography was deemed to be a skill/specialism could be the reason why primary professional identities, other than radiography, have remained dominant and fiercely protected. The concept that sonography was a specialism also helped support the argument that sonography should not be considered for recognition as a registered discrete profession.

Evidence from the literature and the research findings supported the opinion that sonographers, as a community, demonstrated the characteristics of a profession but lacked a discrete professional identity. The sonographer identity, whilst having shared values, attitudes and beliefs, was firmly embedded within the primary profession making it a sub-culture denoted by specialist skills. The complexity of allegiance to different primary professional identities could be argued to have had a negative impact on leading the occupation towards achieving professional status due to the conflict between dominance and dilution. Which professional body would sonographers be registerable with? The most likely answer would be the HCPC due to radiographers being the most widely represented professional group, however this could then be argued to dilute the professional visibility and voice of the nurses and midwives who are governed by the NMC.

Professional elitism and power were enhanced through the mechanism of closure to the professional group; most often achieved through registration or licensure of the specific clinical practice associate with said profession (Morgan, 2014). Ultrasound was unable to enact closure through registration due to it not

being a recognised profession and so looked towards education to restrict access to the clinical community and to uphold cultural traditions and beliefs. Education and training was argued to solidify and enhance occupational identity, culture and traditions, providing the vessel for indoctrination, compliance and conformity to the occupation's culture (Clouder, 2003; Hall, 2005). This socialisation, across all professions (nurses, midwives and radiographers), to the occupational identity during the training period ensured that traditions and beliefs were maintained and protected (Hall, 2005). Education had been influential in the maintenance of the status quo and position of sonography within the health organisation.

5.4.1 Power

Evidence from the research data suggested that the power and dominance of the medical profession and its influence over the growth and development of other professional/occupational groups was a key factor in defining sonographer culture. When considering the evolution of sonography as a discrete community of professionals (a delegation of practice from radiologists to radiographers) it could be argued that values and beliefs of the medical profession were also transferred to the radiographer/sonographers along with a sense of being in a position of power (Allsop, 2006; Larkin, 1983). This notion that the power base and attitudes have been handed down from the medical profession (in the main radiologists) was supported by the interview data.

"maybe it's the radiologist that we've got to blame for all of this then!" (participant E).

Ferris (2005) suggested that the specialty status, given to the sonographers by the radiologists, was what created an elite and exclusive clinical practice. The exclusive clinical practice put them in a position of power within their own professional community of radiographers; it could be argued that the radiologists created a microcosm of their own professional world within sonography through the process of *occupational imperialism*; delegating skills and power to lower ranks in the hierarchy.

The opinion that radiologists had significantly influenced how sonographers perceived their own power status and how they were regarded within the organizational culture, when the sonography skills were delegated to the

radiographers, was supported by the findings of this study; this suggested that it was possible for a powerful professional culture (the medical profession) to influence how another occupational group (sonographers) was perceived and valued within the organizational community.

Historically, radiographers, who underwent further training, were delegated ultrasound clinical competences from the radiologists (Ferris 2005). This exclusive training provided the sonographer community with an opportunity to restrict access to the practice of sonography and become identifiable as a community of sonographers (Lee & Paterson, 2004). The act of social closure was suggested to be one of the main characteristics of a professional / occupational culture creating an environment of exclusivity and power (Elliott & Smith, 2001); thus, suggesting that power was something sonographers gained or were given. Power was something that sonographers had (owned); power was gained firstly through delegation and then exclusive ownership of clinical skills that were valued by health professionals and society.

The exclusivity achieved through training and clinical competence was reinforced in the interview narratives and demonstrated how this exclusivity directly fostered an attitude of elitism within the occupational culture. The shift from power being delegated by the medical profession, through the mechanism of occupational imperialism, to power being realized and used by the sonographers was evident in the participants' responses.

This concept that power was fluid and changed with situations was supported by the French postmodernist Michel Foucault. Foucault believed that power was not owned but exercised (Gaventa, 2005; Navarro, 2006). The participants indicated that they believed sonographers were able to use the power that the valued skills gave them to manipulate situations to their advantage. The sonographers had moved from delegated power to usurpers of power. A cultural shift from occupational imperialism to usurpation had been facilitated due to the workforce crisis. A mutiny within ultrasound was occurring, sonographers found themselves in a position whereby they could dictate terms of work, pay and structure due to the workforce crisis.

Power through usurpation had been acted upon by sonographers through the use of intimidation. Participants talked about sonographers dictating employment terms and creating opportunities to expand their practice by threatening to leave employment and take their skills elsewhere, made possible due to the high demand for their clinical skills. Training and employment of graduate sonographers were blocked in an attempt to protect the sonographer's position of usurpatory power.

5.4.2 Protectionism

Protectionism was illustrated by the participants' narratives, not only to be exhibited outwardly but inwardly amongst sonographers creating sub-cultures within the main occupational culture. Ultrasound not only had the complexity of different primary professions within its occupational community but also an added layer of different ultrasound specialties such as obstetrics, gynaecology, musclo-skeletal (MSK) and general medical. It was indicated in the participant demographics that a sonographer might undertake several ultrasound specialties, but it was unusual to have more than three clinical areas of practice (Appendix 17 –Participant areas of ultrasound practice).

The range of ultrasound practice such as obstetric, gynaecological, abdominal, vascular and MSK created further layers of sub-cultures (specialties) within sonography adding to the complexity of the occupational group. The term specialty, in clinical practice, was argued by Ferris (2005) to create an elitist perspective and a power status that was fiercely protected. Participants within this study demonstrated a high level of protectionism when asked to identify roles that a lower grade sonographer could undertake. Seven out of the ten participants identified roles in ultrasound specialties other than their own area of practice. This was interpreted to indicate that, within sonographic practice, there was evidence of elitism resulting in the desire to preserve the value and status of clinical specialties that the individual was associated with.

Protectionism was directly linked to the fear and anxiety of not being valued and losing status/power within the organization (Bate, 2000; Morgan, 2014; Ward

2006). It has been documented that the participants, in this study, believed that sonographers were anxious about the introduction of the graduate sonographer as they felt it would devalue their skills and ultimately their status amongst other health professionals and therefore provided the "ultimate storm" for protectionism to be exhibited. Protectionism was achieved through closure of practice with the articulation of clinical competence at advanced clinical practice (as previously discussed) and through access to education and training.

Participants within this study were justifiably sceptical about the reasons for the implementation of a graduate sonographer; it was generally felt that the implementation of a graduate sonographer would encourage the revisiting of re-profiling that occurred with the implementation of AFC which would lead to downgrading of sonographer skills and status. The maintenance of hierarchical status within health care provision was also indicated to be a key driver for the sonographer "professional bodies" articulated by the desire to keep sonographer education at Master's level; if sonographer skills were identified to be achievable by a graduate sonographer who was educated at undergraduate level 6 then it could be argued that the position of power and influence created by a Master's level award would be diluted (Farndon & Nancarrow, 2003).

Sonography education being established at Master's level in the 1990's became synonymous with the occupational identity of sonographers creating an elitist attitude amongst radiographers and other health professionals who specialised in ultrasound imaging (Parker & Wolstenhulme, 2012; Price, 2010). Whilst Waring *et al.,* (2015) suggested there was no agreed national approach to sonographer training, CASE's accreditation of ultrasound programmes for education and training only at Master's level (at the time of writing) ensured consistency and a degree of closure to ultrasound practice thereby reinforcing the elitist status that sonography had acquired and wanted to maintain.

Waring *et al.*, (2015) argued that it was imperative for sonographer education to be kept at Master's level; not from a knowledge and skill perspective but to maintain the status sonography had as an innovative and highly valued imaging modality. It appeared from the literature that there was a drive to maintain the

academic level of sonographic education at Master's level as an attempt to protect the status of the occupational group amongst its health professional peers (Potter *et al.*, 2012). This attitude was supported by the findings of the study with participants indicating that they would prefer HEIs to explore different ways of delivering postgraduate education at Master's level rather than undergraduate education to redress the shortfall in training sonographers. Sonographer education and academic level were used as a method of closure to protect the status within the organisational hierarchy.

The attitude that undergraduate education devalued the practice of sonography was evident in the participants' responses. Clinical competences for an undergraduate programme were not identified, with suggestions that sonography was too complex and highly skilled to break down to that level. A belief that there was a loss of value and recognition for clinical practice was suggested to be one of the key motivators for protectionism and resistance to change (Descombre *et al.,* 2006).

In contradiction to the UK participants' opinions concerning undergraduate education of sonographers, a non-UK participant challenged the sonographer education being placed at postgraduate Master's level. It was suggested that a BSc Ultrasound programme could provide the education and training required to be a competent sonographer as this was already the case in other countries such as USA, Canada and Australia. The author does note that reporting competences in the USA and Australia are not at the same autonomous level seen in the UK and that reporting had been consistently cited by the participants as not being a clinical competence for graduate sonographers. The non-UK participant did continue to state that graduate sonographers should not be graded at a band 5 and that a band 7 or 8 was more appropriate for the clinical role due to the knowledge and clinical responsibilities required of the role. These opinions, whilst only one participant's point of view, did support the suggestion that protectionism was much stronger towards grading (banding) than the education level attributed to the training.

5.4.2.a Clinical partnerships

Clinical departments were identified as providing most of the practical education and training for sonographers (CASE, 2016; Parker & Harrison, 2015; Waring *et al.*, 2015). The research findings indicated that clinical departments were perceived to be the "gate keepers" for the training of sonographers and that they were the ones that had the power to influence who were trained, how many were trained and at what level the training and education would be accepted.   The research findings indicated that the "gate-keeping" demonstrated by clinical staff towards innovation in sonographer education to redress the staffing crisis was linked to protection of the power status.

5.5 Implementing Change

Change is when we make something different from what has gone before. It was argued that change needed to be perceived as beneficial to all and not an imposition upon the workforce as this could induce stress and anxiety. Trisoglio (2012) identified that if change was perceived as a negative entity, with very little perceived individual benefit (more for less), then resistance occurred.   It had been identified that resistance to change was present across a range of health professionals especially when change in working practice was being advocated (Henderson *et al.,* 2015). The resistance to change evident in the participants' responses could have been a result of a perceived lack of benefit; there was only one participant that identified the implementation of a graduate sonographer as having a benefit to progress skills into more advanced areas of practice. However, resistance to change had also been associated with fear, anxiety and perceived loss of value (Descombre *et al.*, 2006; Ward, 2006); these emotional perspectives were prolific within the research findings with all participants stating these as main causative factors for sonographers being resistant to the implementation of a graduate sonographer. It was acknowledged that values, occupational cultures and traditions could militate groups against change due to the fear of diluting exclusive specialist practice and occupational/professional identity (Ward, 2006). This dilution was perceived not only to be a threat to the occupations hierarchal standing and

power within the organisation but, for sonographers, also within their associated primary professional culture.

Change has been constant within Health Care and Education; a continuum of linear or cyclical movement that requires good management and leadership in order to be perceived positively (Fullan, 2005). Archimedes (287 -212 BC) when exploring the concept of leadership stated, "Give me a lever long enough and I can change the world". However, leadership during times of change is challenging with many pitfalls; careful consideration of traditions and values was argued to underpin successful leadership (Barr & Dowding 2013).

In times of change if cultural values and beliefs are challenged then occupational sub-cultures might resort to the articulation of threshold competencies and codes of ethics and conduct to legitimise and protect their area of practice, the likes of which were demonstrated by the participant sonographers in their resistance to consider the role and clinical competences for the graduate sonographer (Bloor & Dawson, 1994). Long standing traditions and occupational boundaries found within clinical competence standards were argued to create a substantial barrier to implementing change as it provided the opportunity for *ring-fencing* of clinical practice and skills (Descombre et al., 2006). A balance between continuity and revision of practice, where what needs to be maintained and what needs to be reviewed, was argued to be essential for a smooth transition through the changes (Davies et al., 2000).

5.5.1 Overcoming tradition and culture

Leadership (not imposition from the top down) was suggested to be essential to smooth transitions in times of change; finite consideration of the fears, motivation and needs of the occupational community need to be undertaken so that barriers could be minimized. Barr and Dowding (2103) argued that in times of major change, leadership, whilst crucial, could be challenging. One participant recalled a time in the department where change had been imposed without consultation which had led to decreased staff morale and lack of trust between management and staff.

Change, whilst in the main was suggested to be positive leading to improvement and progression, could create negative feelings if not managed well as indicated in the citation from participant K. Barr and Dowding (2013) suggested that there were ten phases of reaction to change that an effective leader needed to be aware of (Table 3). Each phase was dictated by the emotional state of the individual as they leave familiarity behind and enter a period of unknown.

Reactions to Change

REACTION PHASE	PARTICIPANTS	BEHAVIOUR
Equilibrium	ALL	Familiar – expectations known – current situation
Denial	Participants A, C, D, E, F, K, L	Denies the need for change – negative physical, cognitive and emotional behaviours
Anger	Participants A, C, D, E, F, K, L	Apathy, rage, envy, resentment
Bargaining	Participants A, C, D, E, F, J, K, L	Attempt to eliminate change
Chaos	Participants A, C, D, E, F, L, K	Feelings of powerlessness, insecurity, loss of identity
Depression	Participant A, D, E, F, J, H, L, K	Self-pity
Resignation	Participant A, B, D, F, H, L, K	Proposed change accepted passively without enthusiasm
Openness	Participant A, B, D, J, H, L	Willingness to accept new roles resulting from the change
Readiness	Participant A, B, D, J, H	Acceptance, exploration of new events, physical, cognitive and emotional elements involved
Re-emergence		Empowerment and begins to initiate projects and ideas

Table 4: Reactions to Change Summary (Barr & Dowding, 2013)

Within the participants' responses a range of these reaction phases from equilibrium to resignation were demonstrated. Each individual participant demonstrated different phases with responses to particular questions. When asked about the competences for graduate sonographers the most common reaction was that of denial, anger and chaos; when asked about the future of sonography there appeared to be a shift of reaction towards resignation which would suggest the participants were aware of the need for change but were still nervous as to how it would impact on them. Leadership skills were indicated to be essential in the phases of openness, readiness and re-emergence was to allow change to be fully implemented

It was argued that change resistance was inevitable and came from four main sources: self-interest, misunderstanding, low tolerance to change and different expectations (Barr & Dowding, 2013). Self-interest was demonstrated with the desire to maintain status and band grading; suggested by the participants' perceptions that the implementation of a graduate sonographer would lead to down-grading of existing sonographers and the loss of roles previously undertaken. Misunderstanding and different expectations were argued to be linked to poor communication of the rationale and goals that underpinned the change (Woolley, Caza & Levy, 2011). Participants' felt that the implementation of the graduate sonographer was financially driven by management rather than the desire to improve service delivery and create a structure for sonography that could potentially be a catalyst for professional recognition. Communication, transparency and honesty were key characteristics of an effective leader and would be essential for minimizing and addressing resistance. Self-interest and low tolerance to change were perceived as personal traits of the follower which had a negative impact on the successful implementation of change and were more difficult to manage (Woolley *et al.,* 2011).

At times of change the need for inclusive leadership and visionary skills were argued to be essential for a successful outcome that was agreeable to all (Broome, 1998). Inclusivity was a key issue evident within the participants' responses when asked how sonography could be made sustainable and major change facilitated; suggestions were made that all levels of sonographers

should be part of the decision-making process, however this could also be indicative of the desire to maintain control and power over the changes.

Effective leadership within organizations was complex with many variables and contexts that needed to be considered but especially so with ultrasound due to the complexity of sub-cultures and identities creating multiple facets of self-interest, which have been indicated by Woolley *et al.,* (2011) as being more difficult to overcome.

5.6 Conclusion

Professional/occupational culture, identity and traditions were identified to have significant influence over behaviours within a community of individuals. Sonography manifested itself as a complex community with many layers that created a challenge for leadership and progression. Delegated cultural beliefs and attitudes from the medical profession (radiologists) had reinforced a sense of elitism within the occupational group of sonographers.

Elitism and status derived from specialist clinical skills were the building blocks for usurpation to grow amongst the sonography community. The desire to protect the status and power of sonographers amongst peers and within the organisation was enhanced by the fear and anxiety of being devalued and dilution of professional/occupational identity. Protectionism was not only evident outwardly but also inwardly amongst sonographers due to the multiplicity of practicing professionals and specialities within sonography.

The workforce deficit of sonographers and the increased demand for their clinical skills had placed them in a significant position of power that was fiercely protected through resistance. Usurpatory power to negotiate working standards and pay was exacerbated by the flexibility and non-standard application of career and clinical competence frameworks. Initiatives to redress the supply and demand imbalance in sonography faced mounting resistance due to the desire of sonographers to protect their hierarchical dominance dictated by value placed on their skills.

5.7 Chapter Summary

The lack of professional recognition had influenced many of the emotive and political decisions with regards to considering the implementation of change to the structure, working practice and education of sonographers over the last two decades. Not having access to register sonography as a profession has led to a high level of protectionism towards their clinical practice due to a perceived vulnerability of the occupational community to encroachment from other professions.

Sonography culture had been directly influenced by the medical profession (radiologists). Within the culture of occupational imperialism, the delegation of clinical skills from the radiologists to the radiographers had also transferred some of the beliefs and attitudes from the medical profession to the sonographers creating a mini-microcosm of radiology within the sonographic community enhancing an elitist position. The elitism gained by the ownership of sonography competences gave the radiographers a position of power due to the value assigned to those specialist clinical skills.

The multi-professional nature of the sonographic community created opportunities for inward protectionism amongst the smaller sub-cultures (midwives and nurses) as well as outward protectionism to the wider organization. Furthermore, sub-specialism within ultrasound had also created an environment for protectionism to be fostered. Ferris (2005) argued that specialism created an elitist perspective and power status that was fiercely protected. Sonographers were argued to be a group of individuals within different professions that had specialized in the use of ultrasound as an imaging modality; it was deemed a specialized clinical skill and not a separate profession with its own professional identity. This perception that sonography was a specialized clinical skill used by many professionals as an addition to their professional practice could have been influential in the argument against sonography being a registered profession.

Leadership was identified as being lacking within sonography with regards to progression and development and yet this is a criterion for consultant and advance practice. The lack of leadership from professional and occupational bodies and clinical managers was argued to be because of differing emotional, fiscal and political agendas.

Licensure and credentialing of practice through registration enhanced professional elitism through the exertion of authority over who was eligible to practice. Conversely, the lack of professional registration was also used as a barrier to the consideration of graduate sonographers; this could be argued to be a form of protectionism to preserve the higher grading and therefore value for sonographer practice. This use of protectionism to resist the delegation of skills to lower grades was argued to be detrimental to the development of the occupational group as it restricted the opportunity to expand and develop higher clinical skills and was indicative of a change in culture from occupational imperialism to that of usurpation.

The concept of clinical competence was challenging but it was agreed that without clinical competences a clinical role could not be defined. Competences were argued to be too prescriptive and not relevant to advanced (Band 7) practice. A continuum from competent (graduate practice) through to capable (advanced and expert practice) was indicated to be more appropriate for accurately defining the different clinical roles for each grade of sonographer.

The working world of sonography was challenging with growth in demand for services and a depleted workforce; all of which added pressure and stress on sonographers resulting in reduced motivation and staff morale. A lack of forward planning and funding for training new and existing sonographers were identified as key contributory factors for the workforce deficit. However, it was acknowledged that the workforce deficit had placed sonographers in a very powerful position that fostered a culture of usurpation whereby sonographers could dictate working practice and resist changes that had the potential to reduce their status within the health care hierarchy.

Implementing change was a negative entity when there was very little perceived benefit (Trisoglio, 2012). Resistance to change was associated with fear, anxiety and perceived loss of value; of all which were prolific within the participants' narratives. Careful consideration of tradition and values, clear communication of rationale and purpose as well as inclusivity of all partners in the decision-making processes was required for a smooth transition and implementation of change.

Chapter Six

Reflexivity

6.1 Introduction

The aim was to explore the influence I had on this research, as an educator and sonographer. It was imperative that I acknowledged and reflected on how (in the role of researcher) I had impacted on the study at every stage of the process through reflexivity to ensure reliability and trustworthiness (DePoy & Gitlin, 2016; Reeves, 2010).

> "*A researcher's background and position will affect what they choose to investigate, the angle of investigation, the methods judged most adequate for this purpose, the findings considered most appropriate, and the framing and communication of conclusions*"
> Sullivan (2001, p.483-484)

> "*Researchers are imposed at all stages of the research process, from the questions they ask to those they ignore, from who they study to who they ignore, from problem formulation to analysis, representation and writing in-order to produce less distorted accounts of the social world*"
> Hertz (1997, p.8)

Sullivan (2001) suggested that different researchers could approach the same study situation from different positions and perspectives which would lead to the development of different (although equally valid) understandings being formulated. Whilst differing perspectives had been argued to reduce reliability, it was also suggested that they provided an opportunity for a richer and more developed understanding of complex situations found within socially constructed research (ibid). The concern of subjectivity with regards to qualitative research is undermined if the researcher acknowledges their preconceptions, beliefs, values, assumptions and position during all stages of the research process (Sullivan, 2001). This acknowledgement was facilitated by engaging with the process of reflexivity (Finlay, 2002).

Reflexivity has been regarded as an ambiguous concept with many approaches documented from introspection to discursive deconstruction; despite this it has become a defining feature of qualitative research (Finlay, 2002; Finlay &

Gough, 2003; Sullivan, 2001). It was suggested that, in qualitative studies, the researcher may often be a central figure with the opportunity to influence data collection, selection and interpretation of data; causing qualitative research to be a collaboration of participants, researcher and their relationship (DePoy & Gitlin, 2016; Finlay, 2002; Powers & Knapp, 2006) Reflexivity is suggested to be a process whereby researchers engage in self-awareness and self-disclosure; ultimately leading the researcher into a meta-analysis that explicitly situates themselves within the research (DePoy & Gitlin, 2016; Finlay, 2002). Approaches to critical self-reflexive practice have evolved across a range of research fields which encourage the use of reflexivity to monitor and audit the research process (ibid).

The purpose, benefits and justification for researchers to undertake reflexivity are unquestioned. Finlay (2002 p.225) outlined the benefits of reflexivity as the potential to:

1. Examine the impact of the position, perspective and presence of the researcher.
2. Promote rich insight through examining personal responses and interpersonal dynamics
3. Disclose unconscious motivators and implicit biases in the researcher's approach.
4. Empower others by encouraging a more radical consciousness
5. Evaluate the research process, method and outcomes
6. Enable public scrutiny of the integrity of the research through offering a methodological log of research decisions.

However, how, and to what extent, reflexivity should be undertaken provided me with great challenges. It was suggested that it was easy to fall prey to infinite self-analysis and deconstruction (navel gazing), leading to a loss of focus and a distinct lack of understanding and development (Finlay, 2002). To this end it was my intention to ensure my reflections were linked and relevant to the research study creating a balance of self-revelation and justification.

My approach to reflexivity was, arguably, from an introspective methodology. Tools such as keeping a research diary, member-checking, writing memos after interviews, and discussions with colleagues and my supervisory team enabled a process of self-dialogue and discovery. DePoy and Gitlin (2016) suggested that

personal research diaries that recorded feelings, attitudes and reactions during the research journey were crucial in naturalistic enquiry as an effective quality mechanism. Through engaging with reflexive practice, I developed an awareness of the link between the research findings, personal experience (both participant and mine) and the social context within which the research was situated.

It was acknowledged that reflexive appraisal was a challenge and I agree with Finlay (2002) that it did indeed make me feel uncomfortable and was for the most part an unnatural process. The identification of inter-subjective perceptions and the uncomfortable realization of flaws or inadequacies within the research methodology was argued to make reflexive practice difficult to undertake (Finlay, 2002; Parahoo, 1997). I found regular discussions with my supervisory team and research colleagues helped me through this confessional journey of continual self-reflection on my preconceived assumptions and biases and enabled me to see this process as a positive development and not negative criticism which was my initial reaction.

> **Excerpt from research diary- Sept 2014: "***Working on my DPS1 form – it is quite a destructive process having your writing continuously critiqued".*
>
> **Excerpt from research diary – Oct 2014:** *"DPS1 completed and presentation done – the presentation wasn't as bad as I expected and helped me actually clarify a few things within my project and has given me some brilliant direction".*

6.2 Rationale for this study

Deciding on a research topic was fraught with challenges; balancing my conflicting personal and professional interests with that of political and societal concerns to frame a research problem was initially problematic.

Personality has been argued to be influential when making choices and I think my personality certainly influenced my decisions with regards to choosing my research topic area. When exploring the concept of personality, it appeared that the term was often used interchangeably with character and temperament:

personality defined as the description of the whole person; character, the judgements made about the personality and temperament defined only the emotional aspect of the person (Coon, 1992; McCrae, 2011), suggesting that personality was a blend of attitudes, hopes, values, talents, hates, loves and habits that made up the unique individual. Reflecting on my personality traits, I am very task orientated and practically minded; a task needs to have a useful outcome and I feel these personality traits were very influential over my choice of research topic. I knew, that to maintain my interest, the research topic needed to have a practical outcome.

My personal need to undertake a piece of research that would make a significant contribution to my professional practice was supported by the underpinning ideology of the Professional Doctorate. The Professional Doctorate aimed to encourage scholarly activity which was relevant to professional practice; enabling the researcher to apply research methodologies to the real-world context and ultimately make an original knowledge contribution to professional practice.   The concept that my doctoral research could have the potential to create new knowledge that would facilitate improvements and developments in professional practice was a great motivator for me undertaking the Doctorate in Professional Studies and has remained with me throughout my journey.

My role as an academic, delivering postgraduate ultrasound education, provided the link between personal interest and practical use of the research topic. In my academic role, I was being asked to develop a BSc Ultrasound programme but found this problematic; there were no clinical competences identified for a graduate sonographer from which to frame and map the programme learning outcomes. I thought that if my research involved the identification of these clinical competences it would fulfil my researcher and academic needs.

In hind sight my personal drivers/biases for achieving the identification of a clinical competence framework for sonography that included band 4 to band 8 almost suffocated the research focus. The desire to identify graduate

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sonographer clinical competences almost became the downfall of the research process; which, I now acknowledge, was partly due to my lack of understanding of the complexities of the doctoral process.

I found it extremely challenging in the research process to step back; I needed to be in control. The need for control, to some extent, is evident in my choice of using semi-structured interviews as my method for data gathering. I was uncomfortable with relinquishing control totally, which would have been needed with an open interview approach. Reflecting on my need to control and be organised is possibly due to a coping mechanism that I have employed in both my working and personal life rather than a personality trait. I have learnt how to be organised and control situations around me, which has enabled me to juggle a demanding professional and academic role, being a single mum, daughter and more recently a wife, as well as having a hectic schedule within my personal life.

During the data collection, I became aware of the influence and conflict my bias as an educator was having on the research process. Regular revisiting and entry to my reflective research diary allowed me to see what was happening and to acknowledge that the data was indicating a very different path and that my own motivators were blocking me from seeing that.

> **Excerpt from research diary: June 2015 -** *"…the data I'm getting is not what I was expecting- I will undertake two more interviews and see where it takes me"*
> **Excerpt from research diary: July 2015 –** *"managed to undertake two more interviews and the same issues apply – I'm not getting the data on actual band 5 competences".*

Discussing this with my supervisors gave me the courage to follow the data being uncovered (reducing my influence on the research findings). This resulted in the study being undertaken in two phases and provided a more in-depth understanding of the knowledge being generated. Acknowledging that the research was taking a different path from what I originally envisaged was extremely challenging for me as it made me question the purpose of my research; where was it going? Initially my thoughts were that the golden thread

within my research had been snapped and I was confused about how to proceed. Regular meetings with my supervisors encouraged me to continue and to have confidence in the process as the purpose of the research would become clear with the collection of more data. The research focus had changed from developing a clinical competence framework to that of exploring the culture of sonography and how it potentially could influence sonographers' attitudes and opinions to the implementation of change.

6.3 Affiliation to a theoretical framework

About half way through my data collection I was asked about what my theoretical underpinning for the study was. This was like a bolt out of the blue for me as I hadn't given it much consideration other than it being from a constructivist standpoint. I agonised for weeks over which epistemology my study followed, and I must admit to still being slightly confused. I read about the different philosophies; deciding on one, only to change my mind many times. After a meeting with my supervisors I was asked why I thought I needed to affiliate to either grounded theory, ethnography or phenomenology. My only answer was that I thought there was an expectation to do so; my problem was that my study did not "fit" with those philosophies. My supervisors gave me the confidence to accept that the underpinning theoretical grounding of my study was simply qualitative. Sometimes simplicity is best.

I explored the concept of critical theory and was excited that it seemed to explain what my study was about. Critical theory being concerned with the philosophy of empowering people met my needs as a researcher, wanting my study to have a practical impact. I felt that my research findings would hopefully find some answers as to how sonography could be facilitated to move away from traditional concepts that had restricted change and thus empower the occupational group to be sustainable for the future. Therefore, I concluded that my theoretical framework was underpinned by the philosophy of critical theory through the desire to want my research to make a difference to the working world of sonography.

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6.4 Understanding the methodology

My original plan for my methodology was to undertake a mixed methods approach that had a qualitative theoretical drive as I felt using both qualitative and quantitative approaches would provide the research with a robust framework on which to hang the qualitative interpretations of sonographer opinion and conclusions that were agreed through consensus. The benefits of using both qualitative and quantitative research methods were argued to provide more rigorous, stronger and broader findings on complex phenomena and have significantly more impact than using one research method alone (Moise & Niehaus, 2009). The theoretical drive of the proposed study was to be from a qualitative perspective as the core component of the research was to explore the attitudes and opinions using an inductive approach (Gray.2014). The supplementary quantitative component of the study rationale was intended to measure of the level of consensus at a macro group level. However, the research data gathered in phase 1 of the study made the quantitative aspect of the study redundant thereby the study was purely qualitative with two phases of data gathering and analysis.

I felt more comfortable undertaking qualitative research as this was what I was more familiar with; quantitative statistical research made me apprehensive as mathematics was not my strong point and I was not familiar with statistical software packages with which to undertake the analysis. On reflection, although I was disappointed that the findings from phase 1 of the research project did not provide the identification of graduate sonographer clinical competences, I was quite relieved that a Delphi questionnaire was no longer required; being uncomfortable with both structuring a Delphi questionnaire and the statistical analysis, as I had no previous experience from which to draw on.

> **Excerpt from research diary: August 2015 –** *"Not sure how I feel about my methodology changing – slightly relieved as not too confident with using the Delphi method."*

The qualitative method used was interviewing. I felt that interviewing would enable me to capture a rich data set of verbal and non-verbal data as well as

provide an opportunity for me to clarify and explore comments made by the participants (unlike questionnaires). I felt that the semi-structured interview method, whilst allowing me to guide the interview, provided the flexibility to explore topics I had not considered and reduce researcher bias. I also felt more comfortable with having a plan and structure to the interview; as a relatively novice interviewer, I believed the structure would enable me to maintain my focus (Brinkman & Kvale 2008). My interview technique certainly improved with more experience and without the structure in the beginning I feel I would have had much more of an influence over the data collected, by using leading questions to achieve the data I wanted, rather than letting the data evolve from the participants' narratives. I certainly learnt the importance of using prompts such as "tell me more" and "can you explain that" rather than talking too much myself.

I felt it was important to be able to document non-verbal data so initially decided that the interviews would be conducted face- to-face as opposed to the use of telephone interviews. I felt that telephone interviewing would create a barrier to forming a relationship with the participants and restrict the depth of responses. Whilst the use of Skype could have arguably overcome the issues that were inherent with telephone interviewing, I felt uncomfortable with this digital form of communication due to my lack of experience with using Skype and this was probably why none of the participants opted for this also (Roulston, 2010). However, reality kicked in, I became aware that if I wanted to include participants from a wide demographic, I would need to conduct some of the interviews via telephone.

The issues relevant to telephone interviews identified in Chapter 3 and by Murphy (2003) became very apparent after the first interview carried out via telephone. At times, I found it difficult to keep the momentum of the interview, long pauses were more difficult to interpret without the visual clues or the ability to convey my understanding and encouragement to continue non-verbally. Furthermore, when it came to transcribe the interviews I had not considered the difficulty of writing verbatim what had been said, loss of clarity due to recording issues, background noise and thick accents sometimes made it difficult to

translate what had been said. This made the transcription time for the telephone interviews much longer than those undertaken face to face. If I was to undertake this study again I would certainly take this into account, finding a more reliable method of recording telephone conversations.

6.5 Selecting the Participants

Throughout my study I have referred to the individuals in the sample population as participants, however this term is argued to be more appropriate to action research whereby the individuals contribute to the decision making about the research process as well as provide information about themselves. Informant would have been more appropriate as it is argued that, in naturalistic research, these individuals inform the researcher about their culture and context (DePoy & Gitlin, 2016). However, it was argued that there was some overlap of the terms and no specific guidance in the use and application of them but in future I will be aware that the terms used to describe the individuals in a sample population can have a bearing on the purpose they served in the collection and type of data retrieved (ibid). I feel that the role that the individuals had in my research was best described as participants as they did make decisions about what was important to disclose and inform me about themselves as sonographers and their working world as they perceived it.

Due to ultrasound being a small occupational group some of the participants were known to me (as previous students, colleagues and peers). I was aware of the potential of a power imbalance that could have impacted on the reliability of the interview data; to ensure my recruitment was not coercive participants were made aware that participation was purely voluntary and that they had the right to withdraw at any time (Grady, 2001). Interviewer and interviewee relationships were recognised as having the potential for the interviewee to feel obliged to respond to questions in a way that they thought I wanted; I undertook two pilot interviews and member checked the process making me more self-aware and able to redress any perceived hierarchical in-balance that ensured trustworthiness of the interview narratives.

6.6 Data collection

The data was collected using a semi-structured interview technique. As indicated previously, as a novice researcher, I felt more comfortable with a plan to structure my interviews and ensure consistency across all the interviews. Flexibility to explore issues I had not previously considered was possible due to the structure being not fully fixed and reduced the impact of my preconceptions concerning what would be discussed.

I did feel anxious about my interview ability and recognised the need to undertake pilot interviews to test the interview schedule and become more self-aware of my interview skills.

> **Excerpt from research diary: March 2015 –** "*Feeling apprehensive about undertaking the interviews as I haven't done this for a while. Hope it all goes well, and I don't start to lead and bias the interview data collected*"

At times throughout the data collection I questioned my ability to effectively conduct interviews. Often blaming my interview skills for the lack of data, that I thought I would find, made me frustrated at myself. On reflection, I acknowledged that this frustration was due to me holding preconceived ideas of what I thought the data would provide (clinical competences for graduate sonographers). Discussions with my supervisors enabled me to let go of what I wanted from the research and gave me the confidence to follow the research data rather than drive it to see where it took me.

> **Excerpt from research diary: June 2015 –** *"not sure I'm the data I'm getting is what I expected"*
>
> **And**
>
> **Excerpt for research diary: Sept 2015 –** *" ...not sure how useful this interview was as it was more like …. had an axe to grind – I must be aware of this and ask my supervisors how I manage this".*

Regular meetings with my supervisors helped me avoid the pitfalls of bias and assumptions; I was encouraged to challenge my perspective and explore my rationale for the questions posed and the phrasing used. I found this aspect of

self-disclosure particularly uncomfortable; admitting that my interview technique was not always correct or effective had a negative effect on my confidence as a researcher as I wanted to create a good impression with my supervisors whose opinion I valued greatly.

The interviews were transcribed as soon after the event as was possible. This enabled me to add the non-verbal cues as memos whilst they were still fresh in my memory. I felt it was important not to formally code the interviews until all were completed so that there was no contamination of the interview process. However, it was not possible to remove the contamination completely as I was aware of the direction the interview data was taking the research study (away from my initial plan of wanting the clinical competences identified) as I had transcribed all the interviews in the study. I feel there are advantages and disadvantages of the researcher transcribing the interviews; the process of transcription places the researcher at the centre of the study with interpretations by the researcher being made during the transcription process. The awareness of emerging data could lead the researcher to dictate the content of subsequent interviews or raise awareness of a greater question that they had not considered (as in this research) and follow a different course from the initial plan.

Whilst, changing the interview questions was a temptation, (acting on advice from my supervisors) I continued with the same interview schedule (phase 1) then added more probing questions around the working world of the sonographer so I could fully understand the context of the responses (phase 2). I contacted the participants already interviewed at this stage and posed the additional questions to them so that all participants had the opportunity to comment on the same topic areas. I feel this was a turning point of the study as I had completely let go of my preconceptions of what the research findings should produce and allowed the participants to determine what direction the research findings would travel in.

6.7 Data analysis

The coding of the interviews was a daunting task which I procrastinated over for a long time. I had decided to use a software package NVivo 10 as I was advised this would facilitate a more robust and in-depth analysis of the data from which I could make connections within the data that might not be obvious at first glance. Addressing my lack of knowledge and experience I did attend an NVivo workshop from which I felt empowered to undertake a comprehensive coding analysis of my interview transcripts. The consensus amongst research literature is that, at higher levels of study, the employment of computer software for analysis was expected and thus I embraced the technology (Seale, 2006).

The reality of coding was far from the workshop ideal. I felt at a loss as to whether I was coding appropriately and whether the outcomes of my coding would create useful information. This feeling of not knowing what I was doing negatively impacted on my motivation and engagement with the study.

> **Except from research diary: Sept 2015 –** *"Coding was tedious, and I am not confident with how I have done it – I don't know how I can pull off the data from NVIVO either……All a bit frustrating – I feel like I don't know what I am doing which is making me engage less with my project".*

In hind sight, I now know that I should have engaged with the process of member checking earlier in the coding process; whilst there were slight differences most of the coding had similarities and as suggested by Sullivan (2001) the differences in interpretation in qualitative research are what provides the depth of understanding of complex topic areas. The member checking did improve my confidence levels as well as ensuring the validity of the coding I was undertaking.

Coding was time consuming but essential to aiding my final analysis. However, when I revisited my coding of the data I became very aware of the omission of memos outlining why I had coded data to particular sub-themes and themes. Guest et al., (2006) advocated the creation of a code book that outlined the standard iterative process during coding; noting definition of codes, when to use

and when not to use. Whilst this approach was suggested to be mainly used when more than one analyst was involved in a study, it would have been beneficial for me when analysing the interview data. At the time of coding I didn't see the need to make it explicit in memos why I had coded narrative excerpts to a particular theme (the rationale was in my head); now I am fully aware that robust documentation throughout the research process is essential for reliability and reproducibility especially when revisiting the data after a period of time has elapsed.

In addition to the challenges that coding created for me, using software, which I was not previously familiar with, also created problems. I will admit to not being confident with digital technologies and shied away from using them. I acknowledge that using NVivo widened my research skills, but it did push me to the brink when an update of the software, on licence renewal, wiped all my coding of the transcripts. After this expensive lesson, I saved the coding excerpts of the transcripts to a hard drive as well as on the NVivo file. I feel that the lessons I have learned have broadened my research skills in the realm of management and analysis of data, however, my technophobia makes me wary of relying on it completely.

Furthermore, I have been able to appraise my research in more depth; especially my methodology. I have gained a greater appreciation for the need to develop a robust research methodology that is accurately documented at all stages of data collection and analysis so that the research is clear, trustworthy and reproducible

6.8 Reflections on my development during the re-write

The period between my first viva and starting the re-write of this thesis was a particularly painful time both personally and as a researcher. I was filled with doubt about my ability to complete this piece of work. However, I never lost sight of how important I thought my findings were to practice; it was this belief that made me more resilient and gave me the purpose to carry on and improve

the validity of my findings by more robust reporting of the methodological process and the theoretical framework on which my findings were based.

I have enhanced my understanding of how important it is to accurately and clearly report the methods undertaken in all stages of data gathering, analysis and reporting for all aspects of the research process, including the review of the literature, as this enhances the reproducibility and trustworthiness of the research findings.   I have since learnt that accurate documentation of the iterative process in the analysis phase is fundamental to producing quality research and makes re-visiting your work much easier at a later stage.

In this chapter I have discussed how important the research diary was in helping me to be a reflexive researcher, but I now realise that having the audit trail of the decisions I made throughout the research process was essential in maintaining the continuity when I came to revisit the data during the rewrite; this is something I will always undertake in my research activities. The completion of a coding book will also be something that I use in future research as I feel that if I had done this initially it would have made it much easier for me to pick up the threads of the research data during the re-write and again ensuring continuity and consistency of the analysis.

Flexibility, in my experience, for a researcher is key especially in inductive research. I have learnt that as a researcher I need to be open to change; it is not uncommon for the research direction and the methodological framework to change as the project evolves.   Not all paths or perspectives are known to us at the beginning of the research journey, we must be prepared to be taken on a journey that may require adaptation to the methodological framework and be open to challenges and surprises.

Finally, the most crucial lesson I have learnt during this re-write is, that in order to be the best researcher I can be, I need to be confident to "run my own race" and not let outside influences impact on the quality of my work; by doing this I feel I have produced a much stronger and purposeful piece of research that has the potential to have a positive impact on practice.

6.9 My overall reflection on the research

This research journey has been a steep learning curve for me both personally and professionally. I have enhanced my research skills as well as my ability to step back, reflect and reappraise my preconceptions. Ultimately this process has allowed me to openly criticise my own way of thinking and accept that there is more than one truth. I feel that this research has enabled me to appraise themes that were grounded in the research data and provide a balanced and progressive account of the research findings. During the process of reflexivity, I acknowledged my preconceived ideas and assumptions and in doing so freed myself of the restrictions they had on this research study.

During the writing of the discussion, especially profession versus occupation, I discovered that I was not immune from protectionism (this was my personal experience as a sonographer impacting on my value and belief status). The discussion challenged my own opinions and attitudes which at first was uncomfortable but at the same time facilitated an epiphany of understanding of the deeper issues; empathy for the sonographer situation (because I had lived it) gave me an appreciation for what they were trying to convey in their narratives and resulted in what I feel was a more accurate interpretation of their stories. Sullivan (2001) stated that having a personal connection to the research topic can enable the researcher to uncover greater understanding of a complex phenomenon but it must also be appreciated that, as a researcher, because of my connection I was not a truly unbiased observer and may have been blinded to certain aspects of the data which had the potential to be a limitation of this study.

Excellent supervision and critical friends provided me with the confidence and guidance to produce a research study that was trustworthy, valid and reliable. Whilst I acknowledge I have been central to this research, I have during all phases of this study tried to ensure that I have minimised my influence to ensure this was a true capture of the world of sonography.

6.10 Summary

This chapter has provided an overview of the impact and influence I have had on this study; I have reflected on my bias, assumptions, anxieties and preconceptions which may have contaminated the concluding research findings. I have acknowledged my initial drive to identify graduate competencies and how this was an issue in the early stages of the research but also how I relinquished my own personal agenda to follow what the research was indicating.

The pragmatist in me is a recurrent theme in my reflections with my need to produce an outcome that has an impact for practice. The need for me to inform practice with new and original knowledge has to some extent maintained my drive and enthusiasm throughout this doctoral journey (I did not want to undertake this research just to gain an academic award, I needed it to have a practical purpose).

The doctoral journey has equipped me with more than research skills; I feel that I can step back and consider perspectives that I would not have previously acknowledged in both my personal and professional life. I am now more comfortable in questioning my own deep-seated preconceptions as well as those of others and now appreciate that critical commentary does not have to be negative nor personal.

Coming from a diagnostic radiography background I was, in my early professional life, more comfortable with a one truth (yes/no) view of my world, moving into ultrasound practice opened me to a more pluralistic approach to viewing my world (ultrasound rarely is yes/no being more often suggestive of multiple differentials). The acceptance that, at times, there may be more than one answer to a question has probably influenced my choice of a naturalistic, relativist theoretical approach. My doctoral journey has facilitated me to realise that the way I view the world will not be the same as someone else views it, but also that this different perspective does not make my view wrong or right. Working towards my doctorate has opened my thinking to be more inclusive and considerate of different ways of knowing and understanding the world we work and live in.

Maintaining motivation and drive through five years of study has been difficult and at times I have experienced overwhelming negativity. The all-consuming effect of undertaking doctoral study, at times, have taken a toll on my personal life and made me question what it was I hoped to achieve and why I had taken this path. However, completing this research journey has given me a great sense of achievement. I understand that upon completion of this research I will not be at the end of my learning journey but only at the beginning of my research career.

Chapter Seven

Conclusion

7.1 Introduction

The aim of this chapter was to bring together, in a cohesive summary, the key findings of the study and reflect on the impact these findings may have for professional practice.   Implications highlighted in the discussion were critically appraised in an attempt to explore the research question:

> **"What are the individual attitudes and opinions of sonographers towards the role of the graduate sonographer?"**

Understanding the participants' perceptions of the working world of the sonographer provided clearer insights as to the extent the influence of sonography culture had on forming the participants' attitudes, opinions and behaviours with regards to the introduction of a graduate sonographer to the ultrasound workforce.

Arguments were developed that provided potential solutions that could facilitate the emancipation of sonographers from the restrictive traditional and evolved cultural behaviours that may have had a major influence at times of change. An awareness of the cultural and attitudinal perspectives of the participant sonographers could provide workforce planners and education institutes with essential knowledge and understanding of the complexities within sonography and how best to overcome the negative perceptions that have restricted the development and growth of sonography to date.

7.2 Concluding Discussion

The research was undertaken to explore the attitudes and opinions of a sample of practicing sonographers toward the introduction of the graduate sonographer to the ultrasound workforce in an attempt to redress the ongoing workforce crisis that had been well documented during the last two decades.   The

insufficient sonographer workforce and the increased demand for sonography skills had created an imbalance in supply and demand; this had placed sonographers in a very powerful position. The imbalance was predicted to only get worse if the sonographer shortage was not addressed, placing the sustainability of the ultrasound service (at the time of writing) in jeopardy. However, within the literature reviewed and the interview data, there was a lack of enthusiasm and negativity towards implementing any changes that might provide a solution to the crisis. In order to develop an accurate interpretation of the participants' attitudes, beliefs and opinions it was necessary to investigate their perspectives on the working world of the sonographer and explore the influence of sonography culture.

An understanding of how sonography, as an occupational group, had evolved provided some insightful background as to why sonography had not experienced any significant development in career structure and training during the last twenty years. Sonography was born from the delegation, by radiologists, of ultrasound skills to the radiographers, and in time to midwives and nurses, due to the national shortage of radiologists. Over time other allied professions, such as physiotherapists and podiatrists, also began to train in sonography to complement their main professional role.   The delegation and adoption of sonography by multiple professions created a complex occupational culture through occupational imperialism that lacked professional recognition and licensure.

7.2.1 Sonography Culture: Occupational imperialism to usurpation

The sociological significance of sonographer clinical practice was widely documented but very little was known about the culture of sonography and the influence it had on the collective behaviour and progression of the occupational group. The culture of sonography was explored by asking the participants to describe and make sense of their working world. Creating new understanding of the values, attitudes and beliefs associated with sonography as an occupational culture may provide crucial knowledge for workforce planning, academia and management as well as empowering sonographers, through self-

awareness, to be more proactive in determining the future direction of sonography.

The hierarchical status, delegated by the radiologists through occupational imperialism and reinforced by competence and career frameworks, had been fundamental to the growth of elitism amongst radiographer sonographers within their primary radiography professional group; this elitism and protectionism was then outwardly projected as the demand and value for sonographer skills increased, whilst sonographer numbers did not. This imbalance put sonographers in a position of power and fostered a sonography cultural shift toward usurpation.

An increase in sonography workload encouraged the recruitment of health professions from outside of radiography to undertake sonography as part of their clinical role; creating a multi-professional occupational community. It could be argued that the inclusion of additional professions to the sonographer community should have diminished the elitist cultural behavioural characteristics that had been attributed to sonographers. However, the term specialism, associated with sonographer clinical skills across all professional groups, maintained and reinforced the elitist perception of sonographic practice and underpinned the cultural power shift towards usurpation.

There was evidence that the workforce deficit had remained unresolved and was exacerbated by the increase in demand for ultrasound services. Sonographers, at all levels in this study, were very aware of the powerful position this placed them within the organisational hierarchy. This awareness was argued to further underpin the usurpatory culture that was evolving amongst sonographers. Whilst workload pressure was acknowledged to be high, the general perception amongst the participants was that sonographers felt it was manageable showing no appetite to resolve the workforce deficit. This lack of appetite was a mechanism by which their position of power was being protected and maintained through usurpation.

There were clear links to the emotion of fear amongst the participant sonographers' responses concerning the delegation of lower skilled sonography practice to graduate sonographers. Innovations that would help to resolve the workforce deficit were perceived as a threat to the value of, and recognition for, the practice of sonography as well as the dilution of their occupational power. There was clear evidence from the data in this study that the participant sonographers were collectively negative about the introduction of a graduate sonographer, perceiving no benefit for existing advanced practice sonographers. It was evident that the emotion of fear, held by the participant sonographers, underpinned the cultural behaviour of resistance to change. However, there was evidence that this fear was not directly connected to financial loss. This culture of protectionism amongst sonographers evident within all of the participants' narratives, was perceived to be underpinned by fear and anxiety of the loss of status, value and power within the health care environment.

The wielding of usurpatory power amongst the sonographer community was suggested to have evolved due to the of the lack of sonographer specific career and clinical competence frameworks. Manipulation of the flexible Agenda for Change framework to achieve a higher banding and thus greater remuneration for no additional clinical skills was cited as common practice. The flexibility and interpretative nature of relevant clinical competence and career frameworks were cited by the participants to encourage discrepancies and increase professional jealousy, not only amongst professions practicing sonography, but also amongst sonographers from the same professional background. Furthermore, the multiplicity of frameworks available from the varied primary professional groups increased the complexity and ambiguity for mapping sonographer roles.

To improve consistency and decrease professional jealousies across the different professions the consideration of developing a sonographer specific career framework linked to clinical competences was recommended by all of the participants. Interestingly towards the end of writing this thesis the development of an inclusive sonographer career framework was being explored

by Health Education England, alongside BMUS and SCoR, as part of the government mandate to find a solution to the sonographer workforce crisis.

7.2.2 Profession and Specialism

There were clear links between professional recognition, value and hierarchical status that created an environment for occupational protectionism to grow. Value, power and professional status were inextricably linked within the participants' narratives. There was evidence that the lack of professional recognition fuelled the perception that sonography was vulnerable to encroachment from other professionals; it is suggested that this perceived vulnerability had led to a high level of protectionism within the culture of sonography.

It was a commonly held perception amongst the participants that professionals, who weren't sonographers, devalued the practice through the "dabbling" in sonography. The motivation to close practice to other professionals, enhancing the sense of elitism by exerting authority over who could practice sonography, was obvious outward protectionism. The desire for professional recognition and licensure to practice sonography was mainly indicated from the participants who were radiographers by professional background; radiographers being the dominant profession within the sonographer occupational community were argued to be influential in decision-making concerning sonography progression and development.

The argument that sonography was not a profession but a specialism, when considering how sonography was created as an occupational group, provided much debate within the literature and amongst the participants' interview data. The delegation of sonography skills, to radiographers, could be argued to have made ultrasound a specialism of radiography, thereby creating an elite sub-culture within the professional culture of radiography. The sonography specialism was adopted by other professionals as they undertook training in ultrasound; using ultrasound as an imaging tool to complement their primary clinical roles. The fact that ultrasound was used as a specialist clinical skill amongst a wide professional group underpinned the argument that sonography

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was not a profession but a specialism. Arguably, both terms of profession and specialism, create a perception of elitism and closure of practice either through registration or education.

In contrast to the desire to close practice by licensure to practice (gained through professional recognition/registration) the participant sonographers also used the lack of registration/licensure of practice to resist the introduction of the graduate sonographer to the occupational group. The lack of primary professional registration was argued to render the graduate sonographer unemployable, even though this was refuted by literature, professional guidance and governing bodies.

The resistance to a lower grade, graduate sonographer, was another facet of cultural protectionism in a bid to maintain this growing usurpatory power status; maintaining higher status and value for the sonographic skills through the exclusion of lower grades.

The collective resistance to the delegation of lower skills to graduate sonographers and the implementation of a wider skill mix via mob-rule (usurpation) rather than leadership (occupational imperialism) was arguably one of the main reasons why sonography had not progressed over the last twenty years. The elitist culture of sonography could be argued to have restricted the expansion of sonographer roles due to the resistance exhibited towards changes in working practices (delegation of skills) and education (introduction of graduate training). Effective leadership was argued to be required to undo the years of cultural resistance to change and usurpatory characteristics that had stagnated the development of sonography as a profession, however, it was indicated within the data that the participants' perception was that leadership skills amongst lead sonographers were severely lacking.

7.2.3 Multiprofessional Dimension

The multi-professional nature of sonography had created many challenges for the occupational community. The complexity of multiple primary professions provided the opportunity for inward protectionism to be fostered and

professional jealousies to develop. The allegiance to primary professions, being much stronger than to the secondary profession, especially when there was no professional recognition for the secondary profession, was especially evident with midwives who referred to themselves as midwife sonographers.

The territorial behaviour of professionals had close associations with the desire to maintain a valued professional identity. The resistance to blurring primary professional identities in sonography was probably one of the main reasons why sonographer professional recognition was not as important to the less dominant professions (midwives and nurses) who would be diluted by the dominant radiographer professional group. Inward professional protectionism amongst sonographers from different professional backgrounds was perceived to inhibit cohesion and created a complexity that would prove problematic for achieving sonographer professional recognition.

Leadership of a multi-professional occupational group posed much debate especially when considering who should provide leadership. Territorial behaviour amongst different primary professions inhibited collaboration, ownership and cohesion; participants indicated that agreement on how to lead and progress the occupational group would be problematic due to the wide range of professionals practicing. There was a perception that leadership of sonographers was lacking; inconstancies in guidance between professional occupational bodies and sonography managers created an environment of uncertainty and lack of direction. The differing political, fiscal and emotional agendas of all stakeholders within sonography was exacerbated by the multi-professional dimension of sonography.

The challenges posed by the multiprofessional dimension that existed within sonography were not insurmountable but were interpreted to be at the root of why sonography had remained constant for the last twenty years; leadership and ownership of sonography originally provided by the radiologists (occupational imperialism) diminished due to the multiprofessional nature of the occupational community; leading to no professional body taking overall

responsibility for the leadership of sonographers and therefore providing the opening for usurpation to evolve.

7.2.4 Education and Training

In the absence of registration and licensure, education and training had been the mechanism through which sonography had actioned both outward and inward protectionism. Entry point and academic level were positioned to close access to the sonography community to all but a narrow group of individuals. There was evidence that the maintenance of academic level 7 for sonography training was linked to protecting the elitist status above that of the primary profession and recognition of value for sonographer skills. Literature and participants indicated a strong preference for maintaining sonographer education at post registration Master's level, but offered little justification other than tradition and familiarity.

Education and training was argued to provide the building blocks for affiliation and maintenance of the occupational identity associated with sonography. There was evidence of indoctrination of neophytes to elitist cultural attitudes being intertwined with the achievement of clinical competences associated with band 7 advanced practice, especially with regards to clinical reporting. However, it was suggested that clinical competence assessment was only appropriate for graduate practitioners as this measured the "can do" areas of clinical practice; a holistic assessment using capability was suggested to be more appropriate when measuring complex advanced clinical practice.

At the time of writing, the majority of ultrasound education programmes in the UK used clinical competences in their assessment of advanced practice. A fundamental shift away from clinical competence assessment towards the adoption of assessing capability for advanced practitioners studying at level 7 has the potential to encourage the acceptance of a graduate sonographer practitioner (assessed by clinical competences). It is argued that the explicit articulation and obvious delineation between the different levels of expected sonographer practice would foster a more positive attitude toward the implementation of the graduate sonographer role.

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Benner (1984) suggested that the Dreyfus Skills Acquisition Model more accurately reflected the progression of practice from novice to expert; using competence measures from novice to competent graduate/entry level and capability measures from advanced to expert practice. The author suggests that the Dreyfus model could be compared to the Agenda for Change framework (AFC) that used career banding but not to the four-tier model to which AFC was inappropriately mapped. Consideration of the adoption of a framework that was based on competence progressing to capability and mapping this to the AFC could provide a more consistent approach to applying grading and reducing discrepancies in its interpretation and application. Furthermore, if using the suggested framework outlined below, (Table 4) then it would be possible to map the graduate sonographer role (after preceptorship sign off) to a band 6 rather than a band 5 thereby acknowledging the value of sonographer skills

MODEL					
DREYFUS (Benner, 1984)	Novice / Beginner	Advanced / Beginner	Competent	Proficient	Expert
Sonographer Framework	Assistant sonographer	Degree student and during preceptorship sonographer	Graduate sonographer after preceptorship	Advanced Practitioner	Consultant Practitioner / Ultrasound Lead
Assessment level	competence	Competence	Competence	Capability	Capability
AFC (DoH, 2004)	Band 4	Band 5	Band 6	Band 7	Band 8

Table 5: Sonographer Practitioner Framework

7.2.5 Leading change

There were clear links to negativity amongst the participants' responses and the implementation of change. Change within the occupational group was perceived to be imposed rather than seen as beneficial to the sonographers; this authoritarian leadership style of managing change resulted in pressure,

stress and apathy within the workforce, expressed in the resistant behaviour to consider new innovations in sonography practice. The lack of being able to regard change as beneficial was argued to increase levels of negativity and resistance; this undoubtedly was a causative factor for the participant sonographers' collective resistance to the implementation of a graduate sonographer, as little benefit for the role was identified.

Fear and anxiety, concerning the perceived loss of value for sonographer skills as a result of the introduction of a graduate sonographer, was consistently cited by the participant sonographers; these emotions enhanced their resistance to change. Strong emotional behavioural drivers that were enhanced and condoned through collective ownership were difficult to overcome, especially as they had been held over a long period of time (over twenty years). Effective and inclusive leadership skills that acknowledged the values, culture and traditions of sonography potentially could help to dilute the militant behaviours of resistance found within sonography. Finding a balance between continuity (familiar practice), creating a sense of security and what needed to be revised (potentially threatening) was key to finding a solution to the resistance to change.

Amongst the literature and the research findings there were clear indicators that the clinical departments (therefore the practicing sonographers) were the "gate keepers" to the direction sonography would follow and not the professional bodies, further supporting the concept that sonography enacted usurpation to achieve and maintain power. Clinical departments were suggested to be influential in all aspects of sonography; dictating to some extent education provision, eligibility to practice, grading awarded and the scope of practice of sonographers and therefore are argued to be essential in any dialogue concerning the implementation of change. However, there was clear evidence that ultrasound managers were not necessarily equipped to be effective leaders or to be forward thinking due to long held cultural and traditional beliefs.

7.3 Summary of Findings

The culture of sonography had a longstanding relationship with tradition and value that had provided an emotional and political platform on which practice and education had been framed. Devolved power and status from the medical profession through occupational imperialism (mainly radiologists and obstetricians) created a microcosm of the medical world within sonography, transferring not only clinical skills but cultural and attitudinal behaviour traits to sonographers.

The power status of sonographers was further reinforced by a shortage in the sonographer workforce; with demand for services far outweighing the supply of sonographers. A developed self- awareness, amongst the sonographer community, of their power status within the organisation had fostered usurpatory and protectionist behaviours that encouraged resistance to any changes that would lessen the value, status and power of sonographers. Usurpation, whilst maintaining the status and power of sonographers, is argued to have led to their stagnation through the collective resistance to change and reluctance to delegate clinical skills.

Fear and anxiety of sonographer skills being de-valued and thereby a loss of status amongst the health organisation were key emotive drivers, rather than financial loss, for resistance to change. The perception was that sonographers as a community were very proud of their value and status within health care provision. No perceived benefit to the implementation of a graduate sonographer created a collective negativity toward this solution for the workforce crisis. The collective preoccupation of protecting sonography's hierarchical status and power had blinded sonographers to the opportunities for advancing practice and enhancing their skills that would come with the delegation of lower sonographic skills; this lack of foresight concerning the opportunities for advancement of practice had restricted the growth and development of sonography as a career.

It could be argued that if the culture of sonographer left behind its usurpatory behaviours and returned to an occupational imperialism culture, whereby

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sonographers delegated lower skills down to lower grades this would enable them to advance and extend their skills and practice, thereby providing benefit and eliminating stagnation for the existing workforce. The delegation of skills to lower grades has the potential to increase the sonographers value status within the hierarchy as their skills and knowledge would be valued by lower grades as well as recognised by higher grades thus putting sonographers in a much stronger position for sustainability. However, it's acknowledged that changing established culture and beliefs was problematic and could only be achieved over time.

A sonographer framework that clearly delineated levels of practice and roles, (which could be more appropriately mapped to the AFC grading) would help move sonography toward accepting a competent graduate sonographer that did not threaten or devalue the advanced practitioner's capability. Terminology, used to identify a professional or occupational group, was fiercely protected and needed to be associated with value for the individual. Therefore, the articulation of competence, for graduate practitioners, and capability, for advanced practitioners would provide a progressive hierarchy of clinical value not previously acknowledge in sonography.   At the time that this thesis was completed, HEE, BMUS and the SCoR had joined to propose a new career structure for sonography, the new knowledge generated by this study concerned with competence and capability could contribute to the inclusive articulation of the scope of practice for each level within the career framework proposed.

7.4 Contribution to Practice

The rationale underpinning the professional doctorate was for research to contribute to the body of professional practice knowledge. The originality of this study came from the exploration of the culture of sonography and its influence on the implementation of change in practice; the sociological impact of sonography had been well documented but very little was understood about the idiosyncrasies that defined the culture of sonography and its collective behaviour. This study demonstrated how the impact of the longstanding

sonographer workforce crisis and increasing demand for sonographer skills had been pivotal in the cultural evolution of sonography from a power-passive community into that of a resistant usurpatory culture.

This was a small study that aimed to capture the world of sonography through the eyes of the participant sonographers and was thereby only appropriate for theoretical generalisation.

The study suggested the following concepts for practice to consider:

- Culture and tradition amongst a group of individuals who shared the same values and beliefs, irrespective of whether it was a profession or an occupational community, would be fiercely protected. The usurpatory nature of the occupational culture of sonography (that evolved due to the workforce crisis) was extremely strong, which enhanced the collective will to resist change. Innovation and change to the sonography career structure in an attempt to resolve the workforce crisis was perceived as threatening to the value and status of sonography practice (power) and therefore created a culture of negativity and resistance.

  Careful consideration of professional and cultural values, motivations and beliefs were particularly important when understanding the complexity of sonography culture; achieving agreement in the complex culture of sonography posed many challenges. Strong collaborative leadership from all stakeholders including educators, managers, professional bodies and government was indicated in order to transform the negative and stagnant usurpatory culture of sonography back to one of occupational imperialism that would enable sonography to grow and return to its trailblazer status for which it was once renowned. Leadership, whilst argued to be a characteristic of advance and consultant sonographer practice, was suggested by the participants in this study to be lacking; in order for the sonographer community to be empowered to grow and be sustainable this evident skills gap needs to be addressed.

- Sonographers were extremely proud of the value and recognition that their advanced practice clinical skills were awarded by society and amongst other health care professionals. High levels of protectionism were demonstrated when sonographers perceived that their skills were at risk of being devalued, as in the case of introducing a graduate sonographer to the workforce. Protectionism was demonstrated in various ways to resist the implementation of change that would dilute sonographers value and status within the organization; the perception of little benefit for the existing workforce also reinforced the resistance.

Sonographers needed to be reassured that the introduction of a graduate sonographer would create opportunities for them to grow their advanced practice rather than perceiving it to be a dilution of their existing practice. Educators and ultrasound leads need to demonstrate a commitment to develop postgraduate education and training for existing advanced practitioners; exploring new areas for knowledge growth and clinical practice that aligns to the advanced clinical practitioner framework so as to ensure sonographers can progress above advanced practitioner (band 7) and positively encourage sonographers to undertake research and complete the full Master's award which (anecdotally) at the time of writing was not commonplace.

- Education and training, the bedrock for professionalism and affiliation to the sonographer identity, was heavily influenced by clinical departments. Clinical competences, probably due to the professional preoccupation with threshold competences for registration, were used to measure the attainment of advanced practice sonography skills. Clinical competence was argued to be only relevant for measuring graduate clinical practice, and yet it persisted as the measurement for sonographer advanced practice. The adoption of assessment criteria, providing a differentiation between academic level 6, graduate (competent) practice and academic level 7, advanced (capable) practice, by education providers could provide the acknowledgement of the complexity and value of clinical skills that advanced practice sonographers

sought to preserve; reducing their resistance to the implementation of graduate sonographers.

- Leading on from educational change of clinical assessment delineating the difference between competent and capable; this needs to be mirrored in the clinical competence and career framework. The multiplicity of frameworks in existence that mapped clinical roles and career progression created ambiguity and the opportunity for discrepancy in their application leading to professional jealousy and inconsistency. It was indicated that sonography needed a career framework that was reflective of the clinical skills progression across all grades, providing a wider skill mix that would enable sonography to meet the service needs of the future; at the time of writing HEE had released a proposed sonographer career framework for consultation. It is suggested that the use of competence and capability to articulate and clearly differentiate the hierarchy of clinical skills would produce a more inclusive and holistic clinical career framework for sonographer practice

- Workforce planning teams were argued to be fiscally and politically motivated in their support of introducing graduate sonographers to address the workforce crisis in sonography, whilst it was the perception that sonographers' motivation to resist the implementation was to protect the practice of sonography from being devalued and diluted. It was evident that some of the participant sonographers did not object to the introduction of a graduate sonographer, recognizing that the workforce pressures and shortage whilst placing them in a powerful position, were unsustainable; however, there was strong negativity from all participants towards graduate sonographers being employed at band 5, band 6 being generally more acceptable. Sonographers strongly related the value attributed to clinical practice to the level of banding awarded and therefore it was suggested that the implementation of graduate sonographers would attract less resistance if mapped to a band 6 sonographer role.

The career framework could consider a graduate (band 5) preceptorship period with skills gateways that once completed would result in the graduate sonographer being awarded a band 6 grading and thereby provide recognition of the increased level of skills required (reporting).

7.5 Strengths and Limitations of the study

This was a small study that aimed to capture the world of sonography through the eyes of practicing sonographers and was thereby only appropriate for theoretical generalisation and not broad generalisations to the sonographer population as a whole. The participants were purposively selected to provide a range of perspectives, being selected from practicing sonographers with roles that were reflective of the spectrum found within sonography, but it is acknowledged that they were not representative of the perceptions of the whole population of UK sonographers. However, from recent experience as a member of the sonography apprenticeship trailblazer group and during the collation of responses from its nationwide consultation on the draft standard for the BSc (Hons) sonographer apprenticeship, the participant responses from this project was found to mirror those collated in the much larger apprenticeship consultation suggesting that the perceptions interpreted from this study's data were valid.

The demographic location of the participant sonographers whilst broad ranging including England, Northern Ireland and a USA locum did exclude sonographers from the North West of England; this was due to a large-scale study having already been conducted using sonographers from this area, so as not to contaminate the data of this study. The demographic location of the participants was a potential limitation of the study as this did not include all regions of the UK and therefore broad generalisations of sonographer attitudes, opinions and perspectives could not be made.

In qualitative studies, such as this, where the researcher is situated within the research at all stages presents a challenge to ensure researcher bias is not introduced to the study. The researcher endeavoured to be reflexive

throughout the research process keeping researcher diaries and engaging with peer support to ensure researcher perceptions and judgements did not contaminate the research findings. However, whilst researcher bias should be minimised at all stages, the researcher believes that the connection to the research topic enabled a more accurate and in-depth interpretation of the data and thereby enhanced the reliability of the judgements made.

At the time of writing, developments were finally changing the landscape of sonography, this created difficulties maintaining the currency of the research project and its relevance to what was happening in the world of sonography. It is acknowledged that when exploring attitudes and opinions they are situational and have a fluidity influenced by experience. The perceptions and attitudes of the participant sonographers captured in the data may not be an accurate record of the perceptions held at the point of reading this thesis.

7.6 Recommendations for further research

A wider consultation into sonographers' opinions of clinical competence and capability would be beneficial in the development and articulation of skill expectations for each level; creating an inclusive career progression framework designed specifically to reflect sonographic practice. The identification and agreement of what sonographer skills would be more accurately measured by competence (can do skills) could create the platform for the more complex sonographer skills that identify advanced practice; thus, developing a competence to capable framework that would reflect a sonographer skill mix.

Sonographer advanced practitioner Master's education should be explored with particular reference to how it could meet the advanced clinical practitioner framework and the impact this could have on improvements in leadership within sonography. An exploration of the changing skills, knowledge and roles for advanced and consultant sonographer practitioners with the advent of the graduate sonographer may provide new insights into the broader impact that an inclusive sonographer career framework would have on the culture of sonography.

An exploration into the dynamics of multiprofessional occupational communities within health care would provide a better understanding of how to manage and lead sonography going into the future. Furthermore, this would create new knowledge concerning the potential impact the introduction of a graduate sonographer role, which could ultimately lead to the loss of the multiprofessional dimension, would have on the culture of sonography; the type of workforce it would create and the service it would provide.

7.7 Recommendations for Practice

The research findings demonstrated how professional identity was fiercely protected due to its close association with value and status within an organisation. Artefacts such as professional roles, clinical skills and terminology were used to differentiate professional identities from one another. Professional protectionism and resistance to change was closely connected to the maintenance of the professional identity, with fear of dilution being a key driver to resist change.

It is recommended that educators, professional bodies and workforce planners adopt the Dreyfus Skills Acquisition model, as advocated by Benner (1984), in the planning of a complete sonographer career framework. The Dreyfus Skills Acquisition Model would maintain the professional identify differentiation between graduate sonographer clinical skills, that could be assessed by competence, and advanced practice sonographer complex clinical skills, defined by capability. The clear delineation of the hierarchy of skills from graduate to consultant practice, using competence and capability to define the skills, would provide acknowledgment and value for the advancing skills at each grade. Due to the reduced threat from the perceived dilution of the professional identity associated with advanced practitioner and consultant sonographer clinical skills a more positive attitude towards the introduction of the graduate sonographer could be fostered.

Word count: 61, 538

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APPENDICES

APPENDIX 1 : Inclusion and Exclusion criteria – Phase 1

Criteria	Inclusion	Exclusion	Justification
Date of Publication	From 1997-2017	Prior to 1997 unless still cited	Relevance to practice and competencies expected over the last two decades
Literature type	Peer- reviewed, journals, articles, books,	Non-peer reviewed	Peer- reviewed articles, journals and books would potentially increase the validity and reliability of the data
Language of publication	English	Non- English	Limitation of translation provision
Country of origin	UK, Australasia, American and Europe	Asia, African and Arab states	Similar levels of clinical practice and requirements for guidance/ codes of practice thereby increasing the transferability of the findings to a UK context
Study design	Quantitative Qualitative Mixed methods	None	Qualitative research will provide a rich source of data concerning opinions and perspectives of clinical competence, frameworks and clinical role. Quantitative research will provide statistical inferences of consensus and adherence to clinical competencies Mixed methods is a common research methodology within health research
Professional	Medical, non-medical health care professions	Non-health related professional background	Ultrasound is not profession specific therefore an overview of all professions would be representative
Relevance to subject	Clinical competence Clinical proficiency Competence Clinical role Clinical competence frameworks	Education Management Examination specific competences	An overview of what is understood about the concept of clinical competence, role definition and frameworks would inform the research study. Individual examination specific competence was not the purpose of this study.

APPENDIX 2: FEB 2015 : Literature Review PRISMA – phase 1 initial search

Initial search Keywords:

Ultrasound Competence and sonographer competence or sonographer proficiency or sonographer professional standards
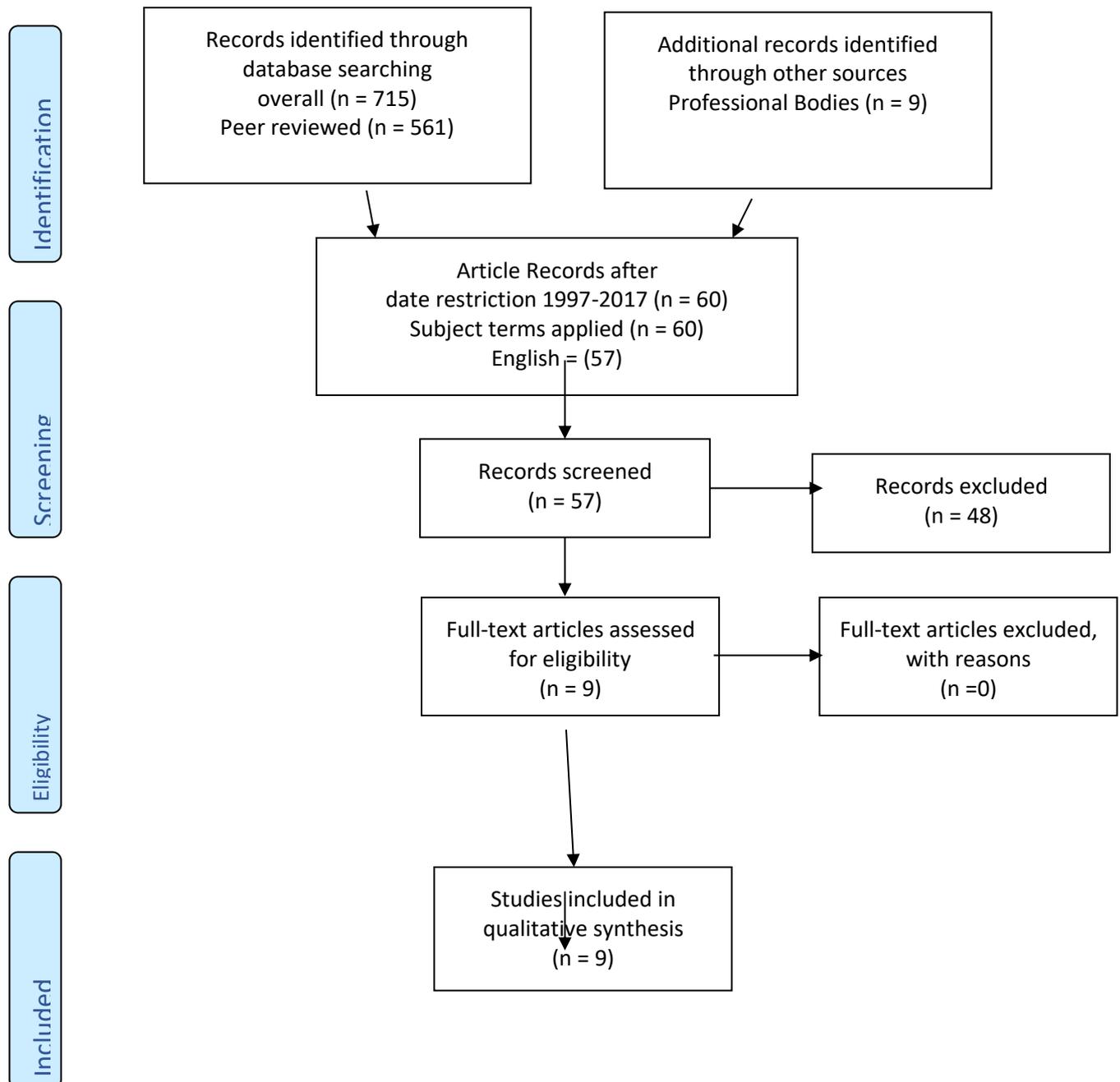
Identification

Records identified through database searching
overall (n = 715)
Peer reviewed (n = 561)

Additional records identified through other sources
Professional Bodies (n = 9)

Article Records after
date restriction 1997-2017 (n = 60)
Subject terms applied (n = 60)
English = (57)

Screening

Records screened
(n = 57)

Records excluded
(n = 48)

Eligibility

Full-text articles assessed
for eligibility
(n = 9)

Full-text articles excluded,
with reasons
(n =0)

Included

Studies included in
qualitative synthesis
(n = 9)

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). *Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement.* PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

APPENDIX 3: FEB 2015 : PRISMA extended search – phase 1

Keywords:

Clinical Competence or Professional standards or proficiency standards and Clinical competence frameworks
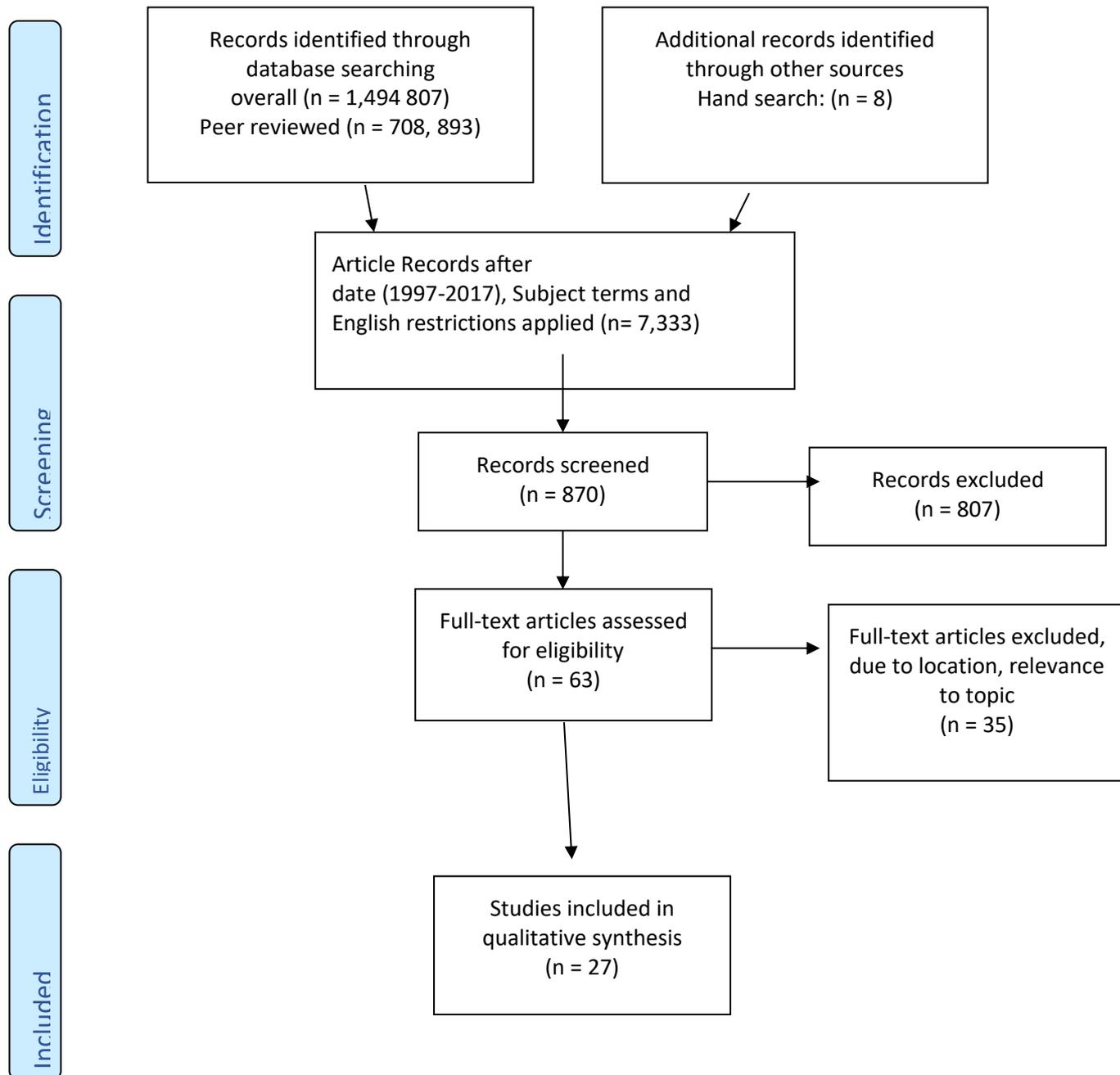
Identification

Records identified through database searching
overall (n = 1,494 807)
Peer reviewed (n = 708, 893)

Additional records identified through other sources
Hand search: (n = 8)

Article Records after
date (1997-2017), Subject terms and
English restrictions applied (n= 7,333)

Screening

Records screened
(n = 870)

Records excluded
(n = 807)

Eligibility

Full-text articles assessed
for eligibility
(n = 63)

Full-text articles excluded,
due to location, relevance
to topic
(n = 35)

Included

Studies included in
qualitative synthesis
(n = 27)

From : Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). *Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

APPENDIX 4: Critical Appraisal Matrix Phase 1 – Feb 2015

Author	Date/ country/ focus	No	Method	Sample size	Sampling strategy	Themes	Findings/bias	conclusions	recommendations
Michels,M., Evans, E.J, Dason E. & Blok, G. A.	2012 UK Clinical Skill definition	1	Qualitative Delphi Thematic analysis Coded CAQDAS v5.2 Consensus levels %	26 Doctors	Inclusion criteria √ 5 different UK hospitals More than 5 years' experience = expert	Domains identified Performance Communication Professional roles Knowledge Clinical reasoning	Clinical skills include Examination skills, practical/procedural, communication and management skills. Professional identity linked to clinical skills	Complex Difficult to gain consensus More than how to perform a skill Forms part of professional identity No bias indicated	Further research on how clinical skills impact on/ create professional identity
Southgate, L et al	2001 Australia Setting performance standards – medical practice	2	Qualitative – literature review	Not known	Not identified	Theoretical framework for the development of performance standards Standard setting from different perspectives Minimum pass levels Quantitative methods, consensus judgements or combination of both Political drivers	True gold standards are rarely available as this is complex Need criterion referenced performance levels Components of performance: Communication, teamwork, cost-effectiveness, humane care, decision making/judgement and currency	A pyramidal framework for performance will facilitate a system that supports a greater level of skill mix and thereby improve cost effectiveness	Develop a health systems approach to judge performance in the ever increasing complex environment of health care

O'Connell, Jane. Gardner, Glenn & Coyer, Fiona	2014 Australia Capability Framework to develop practice standards in nursing	3	Qualitative Systematic Literature review	Results of search not provided	Thematic analysis	Hierarchy of knowledge - different domains for levels of competence Capability building on competence Comparing competence and capability Confusion of terms competence, competency, capability and performance Dichotomy between local policy on task based competence and national professional body expectations	Competence V capability Novice/graduate practice V advanced practice Benchmarks for beginning practice	Context of cognition and advanced practice are ignored in competency standards Competence is appropriate for undergraduate/entry level practice Cognitive domain characterizes the capable practitioner Competencies concentrate on procedural and technical components. Capabilities incorporate creativity and flexibility to adapt and apply to a changing environment	Development of practice standards requires a capability framework that actively includes the cognitive domain supporting all levels of practice.

| Turrill, S. | 2014 UK Standard competency framework Neonatal nursing | 4 | Qualitative Literature review Review of practice | Not given | Not given | Standard framework of knowledge and skills Quality frameworks Career frameworks linked to knowledge, skills, competence and professional development Mapping roles with competencies Knowledge and skills framework Professional bodies Generic principles Uniqueness of the specialism as in the knowledge and skills | No UK agreed SETS makes ensuring a consistent level of education is delivered challenging it is also difficult to determine the limits of the clinical role. Standardizing practice reduces variability and improves quality and relocation of staff | Newly registered nurse competencies are generic and mainly task orientated Core syllabus linked to clinical competency – knowledge and skills provides a stable foundation and a national clarity and definition of the clinical role 3 elements to the Framework; Knowledge and skills Evidence of achievement Quality principles for education | If no professional body takes responsibility for ensuring programmes are fit for practice and not standardized then it will lose its credibility and practice will become inconsistent. Standardization of clinical competency is vital to provide equitable quality care |

Singh et al	2010 UK Development of minimum standards in urodynamic practice	5	Qualitative Focused working group Discussion meeting then recommendations reviewed. Consensus reached but no measurement of consensus identified	9 professional groups	Sample invited to attend the working group meetings	Standardized framework Professional body requirements Knowledge Clinical/professional skills Training and support	Framework provides assurance of quality of care Framework needs to be a living document Benchmarks of minimum standards can measure service	Guidelines and protocols are essential in medical practice	none
Bulley, C & Donaghy M	2005 UK Minimum threshold of performance – sports physio	6	Qualitative Focused group Consensus – no levels Standards subject to external review	5 EU HEI's	EU funded	Capabilities Political drivers- quality mechanism - Employer – pdp – personal goal setting –HEI competency based programmes Competency definition Standards definition Knowledge – cognitive skills Communication Specific National standards	Standards are linked with competencies Framework developed to communicate standards Standards relate to primary competence Standards are description of minimum threshold of achievement of a competency	Implementation of competencies and standards have the potential to raise quality and provide a platform for CPD	Development of an audit tool to clarify ways professionals can evidence their competencies and aid HEI programmes

| Kaslow et al | 2007 USA Assessment of competence | 7 | Qualitative Review of compe-tency assess-ment models – psychology | N/A | N/A | Competence definition Regulation requirements Assessment of competence Knowledge Skills Attitudes Domains of competence Frameworks Capability definition and comparison to competence | Assessment fosters learning, evaluates progress, assists effectiveness of curriculum, advances the field and protects the public Competencies are generic and should be considered holistically rather than as discrete measurements of performance | Problem based learning in Medical education is effective and innovative for teaching and evaluating knowledge, skills and attitudes Frameworks of competence can map from novice to advanced practice | The profession develops a consensus regarding the definition of core competencies – to agree generic and specialty-specific foundational and functional competencies

Determine benchmarks for each competency domain |
| Epstein, Ronald,M. & Hundert, Edward,M. | 2002 USA Defining and Assessing professional competence Medical | 8 | Qualitative Lit review | 195 citations | Medline databases 1966-2001 Reference lists of relevant articles for English language studies Excluded descriptive articles and position statements | 6 areas of competence Defining professional competence - Cognitive function/knowledge – tacit V explicit, personal knowledge. Clinical reasoning. Communication – patient centred behaviours. Moral function Protecting the public Assessment – serves personal, institutional and societal goals | Professional competence protects the individual and the community being served Professional competence is more than a demonstration of isolated competencies | No agreed-on definition of competence that encompasses all important domains of professional medical practice Competence is context dependent Competence is developmental | |

Verma, Sarita. Paterson, Margo. Medves, Jennifer	2005 Canada Core Competencies for Health care professionals	9	Qualitative Systematic Literature review CanMED's roles review		Databases and search terms provided Analysis undertaken not identified	Values, knowledge, attitudes and skills as core competencies Legal, ethical, regulatory and political influences Contract between public and practitioner Competence definition CanMED's framework for physicians expanded to include nursing, physio and OT OT- categories of competencies Physio - Outcome bases and client centred competencies Nursing – 6 professional standards with competency statements	Competence is multifaceted including knowledge, clinical skills, interpersonal skill, problem solving, clinical judgement and technical skill Competence defines discipline Align to evidenced based standards of health care and performance Need for common collaborative competencies:	Competence is a behaviour or set of behaviours that describe excellence in a particular work context.	Common belief that health competencies exist in independent silos a core competence framework can be used to establish interprofessional education and opportunity to compare professional identities

Baker Richard	2006 UK Developing standards, criteria and thresholds to assess fitness to practice Medic focus	10				Need for regulatory standards to be defined Thresholds Standards – general statements Criteria – describe the statements, exact detail Wide involvement of all stakeholders in development of standards Process for developing new standards	Setting standards should include regulators, patients, managers, policymakers through consultation, interviews and representative surveys Standards are a contract between the public and the profession	Development of standards, criteria and thresholds are key to creating professionalism	
Cowan, David.T. Norman, Ian., Coopamah, Vinoda.P.	2007 UK Competence in nursing practice.	11	Qualitative Focused review of literature	Method outlined well with search strategy justified		Development of a working definition of competence as applied to nursing Comparison to global Competence involves a diverse set of qualities Knowledge and skills framework to help standardize competence frameworks Competence from novice to advanced Behaviour – cognitive, affective and psychomotor skills Personal set of capabilities Observable, measureable outcomes Competence V competency	Competence is a poorly defined concept and that measurement is problematic Definition of competence lacked consensus Set of characteristics or attributes that underlie competence performance in an occupation Confusion between competence and competency Competence, competency, capability and performance are used interchangeably	Need effort to find, define and measure competence Competence is the potential capability to undertake a job and competency as the actual performance in complying with standards of care Minimum standards may reduce the quality of care by guarding rather than pushing boundaries	Need for a consensus and clarity on the definition of competence to develop precise competency standards and measurement tools

						Dictionary definitions Blooms taxonomy		Minimum standards can provide clarity of role boundaries and professional accountability Competence standards should not be a task list or be so broad that they are meaningless	
Butler, Michelle. M., Fraser, Diane. M., Murphy, Roger. J.L.,	2008 UK Identification of essential competences - midwifery	12	Qualitative Extended case study – longitudinal interviews	39 student midwives drawn from 6 cohorts across England for case studies 20 midwives from 2 UK sites	Case study participants interviewed at 4 stages 3 months prior to exit, exiting programme, 6 months and 1 year post qualification making comparisons of competence. Theory emerging from case study developed by interviews in 2nd stage to explore view about important aspects of competence	National guidelines Profession Boundaries of practice Public safety Competence, competency, performance and competencies Capability	3 essential categories identified as Safe practitioner – self-sufficiency –range of skills, knowledge base, confidence, currency of skills and knowledge, personal and professional awareness Attitude – motivation – maintaining standards of care, caring, compassion, empathy, Effective communication	Competence equates to being safe Registration ensures a professional is safe to practice Linkage to ICM's 8 professional behaviours (2006)	None

| Gardener, Glen. Carryer, Jenny. Gardner, Anne. Dunn, Sandra | 2006 Australia Nurse Practitioner compet4ency standards | 13 | Multi-methods Lit search Interviews surveys | | Literature review - past 6 years of publication

Purposive sampling from nurse practitioners across 5 Australian states and New Zealand Competency framework was devised from data from in-depth interviews –audio recorded and transcribed Analysis included both inductive and deductive methods Storylines collated into conceptual categories Ethics secured | Dynamic Practice Professional efficiency Clinical leadership Professional regulation defining national standards for the regulation of nursing practice Competency benchmarks for undergraduate education and regulation Competency assessment | No evidence of development of research-informed competency standards for nurse practitioners Safe standards of practice are demonstrated by the use of competency standards Core standards describe the core role: characteristics of this role define generic standards and practice competencies Competency framework that describes standards needs to be evaluated by capability – confidence in ability to perform | Identification of 3 generic standards that comprise of practice competencies each of which have performance indicators Standards support standardized practice and scope of practice Standards and competency framework provide clear meaningful and logical foundation to practice, regulation and education. | Framework outlines the need to identify a standard and then further describe this standard by competencies which are further described by performance indicators i.e. **Standard 1. Dynamic practice** **Competence 1.1** Conducts holistic health assessment *Performance indicator*:
a) Differentiates between normal and abnormal findings

Introduction of a framework needs to be staged – following implementation there needs to be comprehensive evaluation via wide ranging consultation with all stakeholders |

Homer, Caroline.S. E.,et al	2007 Australia National competency standards for Midwives	14	Multi-method – Qualitative and quantitative data Lit review Workshop consultations Interviews Surveys Qualitative data analysed by 2 researchers and after coding of themes verification of allocation done by a 3rd researcher	Ethical approval achieved 40 midwives observed for 533 direct and non-direct episodes in the validation round	**Lit review** – Lit review used to draft competency standards for consultation **Method:** Purposive sampling **Round1** –focus group – changes made to framework **Round 2** – 8 workshops (focused group) – 153 midwives range of demographics – feedback developed framework **Round 3 – wider consultation -** web based survey (66) , written submission (4) international review (UK & NZ) and telephone interviews with a range of stakeholders **Round 4**- validation of competency standards –	Competence and competencies defined. Range of purposes for national competency standards (7 outlined) 4 domains identified (Standards) in each domain were competencies – each competency had elements (performance indicators). Issues of specific versus broad competency standards – does not support specific, task orientated and detailed approach (what a practitioner is expected to do).	Prior to this there were no national consistency about competency standards for midwifery practice Definitions of competence describe standards of practice Competency standards can be incorporated into employment contracts, job specs, performance appraisals, accreditation of education programmes and regulatory practices.	Competency standards provide a national standard and reinforce responsibility and accountability thorough safe and effective practice	A strategy for implementation is needed to ensure standards are embedded into practice, education and regulatory settings

						direct observations and interviews			
Chiarella, Mary. Thomas, Debra. Lau, Cecilia. McInnes, Elizabeth	2008 Australia Overview of competency in Nursing and Midwifery	15	Review of literature and a survey of nurses and midwives				Definition of competency by the regulatory body Identifies 6 principles for assessment of competency Competency standards divided into domains with statements/descriptors Difficulties in identifying minimum performance indicators for each competency Purpose and use of competency standards Standardization across common domains debate Professional regulation Capabilities rather than competencies debate	Provides professional standing and scope of practice Provides a foundation for public accountability	Issues with defining minimum required level of performance Standardization of terms to ensure consistency across major domains whilst maintaining differences for specialized care	Mapping of competency domains, elements and performance indicators across a variety of competence standards to identify themes of similarity and differences to assess the feasibility of standardization of some of the domains Examination of construct validity and suitability of competence frameworks in terms of the purposes for which they are designed. Systematic review of competency literature to ascertain how much and what level of evidence there is to support the use of competencies in terms

									of standards setting, safe practice an enhancement of patient outcomes
Windsor, Carol. Douglas, Clint. Harvey, Theresa	2012 Australia Politics of skill/compete ncy formation	16	Review of assessment tools	406 assessme nt tools	**Clinical assessments over 17 years** **180 -3rd year** **115 – 2nd year** **111 – 1st year** **Ethical approval sought but not warranted** **Content analysis**	Elusiveness of skill and competency Lacking definitions of competence and competency Behaviour Assessment of competence 4 categories of clinical competence Political drivers for broader productivity and workplace flexibility impact on competence frameworks (Micro-economic reforms) UK, USA and Aus White papers on Health reforms	Tension between generic areas and specific nursing skills		

Andrist, Laurinda, S. Schroedter, William	2001 USA Minimum entry level competence for Sonographers	17	Collaborative review	Multiple profess-ional groups	**Focused group 14 months Consensus to develop minimum educational and clinical standards to enter Diagnostic ultrasound**	Certification Minimum standards Scope of Practice Clinical practice standards Academic standards Number of examinations to achieve competence CPD	Cognitive and psychomotor skills are necessary to competently perform any ultrasound examination BSc certification by 2012 for all entry level professionals	National board certification should be mandatory to ensure public protection and quality of care	Continual review
DOH Prepared by Lisa Hughes	2011 UK Report to National AHP Advisory board on a competence based approach to Workforce planning and development	18	report	Frame-work developed from database of comp-etences (NOS) – field tested over 2.5 years		Common attributes of AHP's Definition of competence Competence based framework definition NOS –competences against which performance can be measured Cost-effective workforce	Framework describes 8 components of a job and 9 levels of performance	Frameworks should include role requirements, core and specific competences, education and training requirements, progression routes	

SCoR	2009 UK Im-plementing the Career Framework in Radio-therapy – policy into Practice	19				Maintain practice standards Outline of the 4-tier framework Policy drivers – political, service needs Occupational standards, competency based development Definition of the four tiers	Full implementation of career pathway model for the future of the profession	Performance indicators mapped to each tier of the framework	No recognition of Ultrasound
Zasadny, M.F. & Bull, R.M.	2015 NZ Assessing competence in UG nursing students	20	Evaluation of the ASAP student assess-ment model and tool	225 final year students from 7 hospitals 23 clinical facilita-tors	Feedback gathered using a 5-point rating scale Pass rates as %	Qualitative data organized into 4 emerging themes Assessment Focused diagnosis Removal from PEP Documentation of evidence	The tool supported accurate determination of practice Template enabled the pinpointing of problem areas Enhanced confidence to remove a student from practice Documentation increased objectivity within assessment of clinical competence No conflict of interest	Reduction of ambiguity with assessment has the benefit of limiting an unsupportive learning environment Creates a fair and transparent mode of assessment that promotes public safety Enable to move beyond reductionist assessment to capture more complex aspects of nursing Tool lends clarity to assessment and documentation, limits subjectivity and	The model has the capacity to be adapted across practice concepts

								support individual learning needs	
Cassidy, S.	2009 Assessing competence	21	Lit review 41 research articles 14 opinion articles 8 literature reviews	Focus was given to the research articles	UK and EU literature 1996-2007	Identification of different interpretations of competence and competence assessment	There are a number of conflicts for students and mentors in maintaining a fair and transparent assessment process Lack of clarity about the concept of competence	Competence should be given greater credibility	

Bentley, J. & Dandy-Hughes, H.	2010 British Journal of Community Nursing 15(10) 485-91 Competence measurement	22	Evaluation of comp-etence skills assess-ment	Review of practice	UK		Evaluation of competence assessment in the workplace	Controversies surrounding competence measurement and performance measurement Clear link between safety of care and competency of the care givers One of the drawbacks of KSF is its vague nature of its examples of application in the indicators. The NMC standards of proficiency are equally vague; adequacy and sufficiency are ill-defined and non-prescriptive	There is no gold standard for measuring clinical competence but self-assessment should be incorporated Standardization of competency frameworks is dependent on an agreed definition of what competence in practice means yet there is no consensus	
Banning, M.	2012 Nurse Prescribing Vol 10 (3):148-153 Capability	23	Review				Forms of knowledge entrenched within assessment of competence 1. personal/process knowledge = problem solving, decision making, professional judgement, self-awareness. 2. Propositional – theory based 3. Conditional – ability to articulate the rationale behind a problem	Competence is a nebulous concept defined in numerous ways. Assessment of clinical competence is problematic especially when discriminating between different levels of competence Competence based course are prescriptive and reductionist and inappropriate to address complex phenomena Competence versus capability debate Competence tends to deal with the known and the predictable – tend to be prescriptive	Competency based learning provides a narrow view of practice and can impede professional development	

							Capability – the extent to which individuals adapt to change, generate new knowledge and continue to improve their performance. High levels of self-efficacy and can use their competences in new and familiar settings. Can manage complex and non-linear challenges Competence is an attribute of capability		
Green, T., Dickerson, C. & Blass. E.	2010 British Journal of Nursing Vol 19 (20): 1293 – 1298 Using NHS KSF competences in workforce planning	24	Mixed methods question-naire that evaluated 5 projects that tested SFH comp-etence e-tools and products over a 12-month period	5 sites	DoH and SFH funded and established the 5 projects	Usefulness of competence tools Benefits of competence based framework for service redesign and workforce development SFH competences and the NHS KSF relations Conceptualizing competence	Benefits of using competences and competence tools increased clarity, structure and provided consistent and standardized approach to workforce development. Competence frameworks can be used for patient care pathways, practitioner roles and areas of service delivery Difficulties in rigorously defining competence conceptually	NHS KSF has been a driving force to competence based workforce development in the NHS. SFH has developed national workforce competences that aim to improve behavioural performance which increases productivity SFH competences can be used as a common currency in the design of job roles **Conflict of interest Tess Green worked for**	Skills for Health national workforce competences can be used to provide a more standardized approach to workforce development.

									Skills for Health at the time of the project and writing of the article	
Lejonqvist, G.B., Eriksson, K. 7 Meretoja, R.	2012 Scandinavian Journal of Caring Sciences Vol 26: 340-348 Evidence of Clinical competence	25	Qualitative question-naire using open ended questions Questions on how clinical compet-ence is character-ised and exper-ienced Inductive content analysis	21 3rd year nursing students 9 Nursing lecturers 21 nursing mentors	Purposive sampling 51 completed questionnaires	Clinical competence Experiences of clinical competence What contributed to and maintained clinical competence The relation between evidence and clinical competence	Clinical competence evident as encountering, knowing, performing, maturing and improving. Being both a stage and an on-going process, comprising an ontological and contextual dimension. Encountering knowing and performing were core to clinical competence Maturing = growth of clinical competence Improving = refinement and maintenance of clinical competence Good use of table to show how themes were coded No conflict of interest	Clinical competence was an ontological clinical competence carrying the inner meaning of nursing (the culture of nursing – words thoughts and actions transferable from context to context requiring high moral, knowledge, performance, maturity and courage) and a contextual clinical competence developed in specific contexts (the variations of the	Important to distinguish between ontological and contextual clinical competence – ontological clinical competence should be achieved in education holding the foundations of practice and expressed in learning outcomes. Contextual clinical competences can only be achieved after experiences

									ontological and dependent on context) Clinical competence is a process rather than a static stage	
Lester, S	2014 Journal of Assessment and Evaluation on Higher Education Vol 39 (1): 38-52 Professional competence standards and frameworks in the UK	26	A qualitative review	40 UK profess-sional standards	Purposive sample of self-governing professional bodies Mix of state regulated, chartered and non-chartered professions	Contextualize competence, how professions described competence and the way competence statements are structured. What they are used for and linkage to occupational standards	Frameworks use primarily an activity based approach to competence Frameworks tend to follow a hierarchical structure containing 2 or 3 levels of proficiency Clarity and language used in frameworks was variable Most included a set of statements on general professional principles (values, ethics, professional practice and judgement) Most frameworks referred to a single professional level such as social worker, radiographer, chemist etc. and are universal	The extent to which current frameworks are fit for purpose is variable. There was insufficient detail and precision to support robust and consistent assessment Good exemplars are concise, use precise language, can be interpreted across relevant contexts, use plain English.	Frameworks should be sophisticated but straightforward and clearly expressed, considers breadth of roles within the profession and fit for a variety of purposes including but not limited to assessment of qualified status.	

							meant to be applied at entry level to the profession		
Yanhua, C. & Watson, R.	2011 Nursing Education Today Vol 31: 832-836 A review of clinical competence assessment in nursing UK	27	Literature review following PRISMA guidelines	23 papers	Databases from Jan 2001 -2010	Concept of clinical competence Reliability and validity of assessing competency	Definition of competence still lacks consensus remaining obscure and contradictory Competence assessment is a systematic process and many factors can detract from a valid and reliable measurement and competence level can also be influenced by situational factors Clinical competence is essential for public safety which is ensured by professional standards No conflict of interest	Clinical competence needs to track changes from student to graduate with more robust mechanisms	

Professional Document Title and Author	Year Country of origin	no	Main themes	Conclusion	Recommendations
National competency Profiles for Generalist Sonographer SONOGRAPHY CANADA	2014 Canada	1	Standards for education and certification Definition of competence, entry level proficiency Common core competencies and practice specific competencies Education programmes	6 Main Competency areas/Standards with sub competencies and performance indicators	
Competencies required for the practice of Ultrasound MEDICAL RADIATION TECHNOLOGISTS BOARD	2011 New Zealand	2	Competencies and skills Safety Professionalism and Registration Skills and Knowledge base Key Minimum competencies Sonographer scope of practice Uses of minimum competencies Generic competencies and ultrasound specific Skill levels/performance indicators	Professional competencies consistent with the recommendations of the International Professional Bodies 10 competency areas identified with differing skill levels required Skills development profile indicates a standard/competence area (communication), Competence/skill (respect others as individuals) and performance indicators/criteria (Identify ways in which gender etc.),	Review every 3 years
Education and Career Framework for the Radiography Workforce SCoR	2013 UK	3	3d version 4 levels of practice Assistant, Practitioner, Advanced and consultant Emphasis on core disciplines Professionalized workforce with a clear identity and set of values	All levels have competencies but only the assistant level has identified ultrasound as a clinical context of practice.	No competencies for ultrasound practice at practitioner or advanced levels

Summary of KSF core dimensions DOH		4	Levels 1-4 Communication Personal and people development Health Safety and security Service Improvement Quality Equity and diversity	Each dimension identifies the core performance indicators to determine the level at which the professional is performing	Used to determine roles
National Occupational Standards SKILLS FOR HEALTH	2014 UK	5	Definition of NOS Knowledge, skills and understanding Benefits of NOS Pregnancy and Ultrasound NOS Performance criteria, Knowledge and Understanding,	Improves productivity, workforce planning, skills gaps, benchmark for remuneration for experience, knowledge and competence Provides a measure for performance Identifies professional development needs Create units of learning for HEI's	
Allied Health: Credentialing, competency and capability framework State of Victoria	2014 Australia	6	Credentialing Defining scope of practice Safety and quality improvement National Standards Defining competence – knowledge and skill applied to a performance standard Competency Frameworks Capability defined as behavioural skills	Frameworks provide a means for establishing and developing the clinical competency of the workforce. Concept of competency is inconsistent however each describe knowledge and skill sets Framework focuses on what a person can do in the workplace in relation to a required standard. Capabilities are expected behaviours and attributes of developing professionals in higher grading's	
The Code: Standards of Conduct, performance and ethics for nurses and midwives	2008 UK	7	Safeguarding the public, set standards for education, currency	Comprehensive range of generic skills not task specific	Continual review

			of knowledge and skills, rules for practice Outlines standard, competence and performance indicators		
Standards of Proficiency Radiographers HCPC	2013 UK	8	Threshold standards to protect the public Generic elements Profession specific elements Scope of Practice Legality	Standards and performance indicators set out for generic and profession specific proficiency Profession specific competencies are profession task orientated	Continual review
Guidelines for Professional Working standards Ultrasound Practice UKAS	2008 UK	9	Outline of general guidelines for professional behaviour Examination specific guidelines Code of Practice	No performance indicators for differing levels of practice	No outline for practitioner/graduate competencies

APPENDIX 5 : Inclusion and Exclusion criteria – Phase 2

Criteria	Inclusion	Exclusion	Justification
Date of Publication	From 1987 -2017	Prior to 1987 unless still cited	A 30-year date range would enable the research to develop an understanding of how the concepts have evolved over time
Literature type	Peer- reviewed, journals, articles, books,	Non-peer reviewed	Peer- reviewed articles, journals and books would potentially increase the validity and reliability of the data
Language of publication	English	Non- English	Limitation of translation provision
Country of origin	UK, Australasia, American and Europe	Asia, African and Arab states	Similar levels of clinical practice and requirements for guidance/ codes of practice thereby increasing the transferability of the findings to a UK context
Study design	Quantitative Qualitative Mixed methods	None	Qualitative research may provide a rich source of data concerning perspectives of professional culture and professional identity. Quantitative research whilst deemed less frequently used to explore this topic area may provide statistical inferences of consensus to what is professionalism. Mixed methods is a common research methodology within health research
Professional	Medical, non-medical health care professions	Non-health related professional background	Ultrasound is not profession specific therefore an overview of all professions would be representative
Relevance to subject	Professional Culture Professionalism Professional Identity	Non-health related professions	An overview of what is understood about health professions cultures and how they influence behaviours and attitudes would inform the research study.

APPENDIX 5 :

APPENDIX 6: DEC 2015 PRISMA 2009 Diagram Phase 2
Keywords:
Professional Culture
Professional Identity
Professionalism
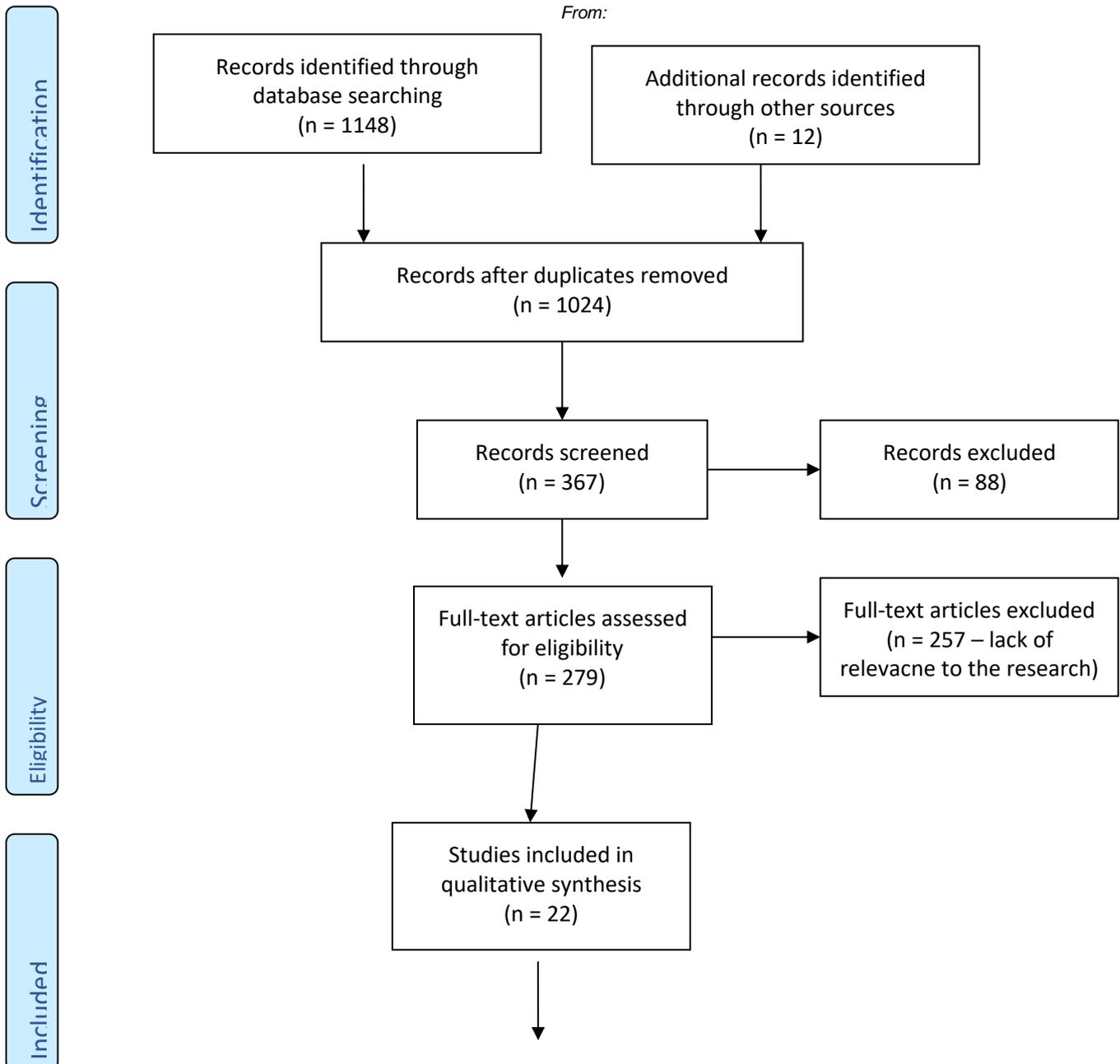
From:

Identification

Records identified through database searching
(n = 1148)

Additional records identified through other sources
(n = 12)

Records after duplicates removed
(n = 1024)

Screening

Records screened
(n = 367)

Records excluded
(n = 88)

Eligibility

Full-text articles assessed for eligibility
(n = 279)

Full-text articles excluded
(n = 257 – lack of relevacne to the research)

Included

Studies included in qualitative synthesis
(n = 22)

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). *P*referred *R*eporting *I*tems for *S*ystematic Reviews and *M*eta-*A*nalyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

For more information, visit www.prisma-statement.org.

[APPENDIX 7](): Critical Appraisal Matrix – Phase 2: December 2015

Author	Date/ country/ focus	No	Method	Sample size	Sampling strategy	Themes	Findings/bias	conclusions	recommendations
Bloor, G & Dawson P	1994 – still cited Australia Professional Culture in an organizational context	1	Qualitative Case study analysis	Review of home-care service in Australia		Organizational culture Professional groups Professional subcultures Values, attitudes and expectations	Professionals enter an organization with knowledge gained from society and from professional training schools and previous work experiences. The sharing of beliefs and experiences leads to the development and maintenance of subcultures No bias identified	Professional subcultures exist within organizations Professional values, beliefs and practices may be used to gain a dominant position relative to other groups. Subcultures are significant are a major determinant in organizational culture.	Further case-study research into professional subcultures to inform theoretical debate of organizational culture
Ferris,C.	2009 UK Specialism in Radiographer practice	2	Qualitative Semi-structured interviews Thematic analysis	31	Phase 1: criterion-based purposive sampling = 21 practitioners Phase 2: theoretical purposive sampling = 10 leads in radiography	Specialist practice Characteristics of specialist practice	Specialist practice is identified by imaging modality Specialist practice is characterized by full time commitment, capacity for the subject to divide, challenging practice, autonomy, need for additional training and education. No bias identified	Some confusion as to what constitutes a specialism in radiography. Perceptions about specialism in radiography originate in exclusive and restricted practice	None

| Nancarrow, S. & Borthwick, A. | 2005 UK Professional boundaries in workforce change | 3 | Qualitative Literature review | Results of search not provided | | Workforce flexibility Professional power Social closure to ensure status and position Occupational imperialism and usurpation Changing boundaries of the health workforce – vertical and horizontal substitution Diversification Specialization | Occupational strategies often centre on the protection and maintenance of boundaries and to expand areas of control Licensure and regulation control advance goals of professionalization 4 stakeholders are influential in shaping professional occupations practicing members, the users, the universities and the state Specialisation is primarily in the post-registration level

No bias identified | Shortage of medical practitioners is seeing medical roles being usurped by nurses and AHP's Medical practitioners have less control over the professional registration and roles of other groups Although hierarchies still exist in health professions nurses and AHP are introducing their own subordinate workers | None |

Hall, P.	2005 Canada Professional cultures and barriers with particular reference to interprofessional teamwork	4	Qualitative Review of practice	Not given	Not given	Evolution of professional cultures Patriarchy Socialization during training reinforces the professions unique world view. Professionalization	Professions have different value systems that are instilled during training

No bias Identified | Professionalization and boundaries hinder effective interprofessional team working due to the encouragement of working within silos | |
| Clouder, L. | 2003 UK Professional socialization in health and social care Primary study to capture perceptions and experiences of students to explore changes in personal and professional identities | 5 | Qualitative Longitudinal cohort study Constructionist perspective Inductive approach Unstructured interviews | 12 8 females 4 males | Purposive | Internalization Indoctrination Compliance and conformity | Professions are a powerful structured reality in which newcomers are molded into "good" professionals Those that aspire to be a professional are willing to be molded - conformity Imperative regulation and control within a profession should not be underestimated.

Researcher background in health but not in OT | The profession is the power that shapes the newcomers | none |

| Davies, H.T.O., Nuttley, S.M. & Mannion, R. | 2000 UK Clarity of Organization-al culture and culture change | 6 | Literature review | Not given | Not stated | Notions of culture Something and organization is or has? Social construction Rivalry and competition between professional groups Different levels of culture within the NHS – assumptions, values and artefacts. Cultural formation and transformation Managing culture | Organizational culture is an elusive concept with competing interpretations Organizational culture emerges from what is shared: beliefs, attitudes, values and norms of behaviour, the way things are understood, judged and valued. Levels of culture: unconscious (taken for granted beliefs); conscious (organizational values that represent goals and standards); concrete manifestations (ceremonies, traditions). Culture is more dynamic than static. Organizational culture can be influenced by outside factors such as public opinion, media, regulatory frameworks and government No conflict of interest | Organizational culture is an emergent property of that organization's constituent parts Different cultures emerge within the organization with different professional groups differentiated by their artefacts and values. Cultural change should be a balance between continuity and renewal. | The lack if empirical evidence about the influence of organizational culture on the quality of health care is replaced by conceptual thinking highlighting contention rather than consensus. A more sober assessment of the task of cultural transformation in health care is warranted. |

Allsop, J.	2006 UK Medical dominance in health care	7	Literature Review	Not given	Not given	Governance of medial work in an attempt to reduce medical dominance. Self-regulation versus state regulation. Status Workforce shortage and power	Whilst political economy both global and in the UK have changed health care politics some professions still remain powerful. Status derived from acquisition and control over a body of knowledge, clinical autonomy. Powerful position due to workforce shortage.	Despite greater regulation of medical work, medicine retains considerable power due to its labor shortage. Supply shortages have political as well as economic repercussions as practitioners negotiate substantial pay awards not associated with productivity. The ability to influence outcomes rather than determine the agenda indicates that medical dominance has transformed rather than being annihilated. Control over medical knowledge, high status of the profession and shortage of workforce maintains a powerful position	An appointed GMC rather than membership that is answerable to Parliament may enable the professional elites to focus on core aspects of professional governance
Beales, J., Walji, R. & Papoushek, Z. A.	2011 Canada Professional Culture and inter-professional team collaboration	8	Qualitative Case study Semi-structured interviews and focus groups Themes identified by a modified content analysis approach	42 nursing, medicine and AHP	Non-random convenience sample from one centre	Professional culture Family Health Team culture Resources	Professional culture cannot be separated from one's personal, social or professional history Professional culture ties in with opinions of accountability, power and hierarchy. Structure and processes with clearly articulated scopes of practice, skills, authority; clarification of roles and responsibilities and	Health care providers need to build collaborative competences (role clarity, effective communication) to create a highly performing interprofessional team.	none

							opportunities for development are necessary to diffuse tension that exists between cultures		
Morgan, C.,J	2014 Australia Professional Protectionism amongst health professionals	9	Interpetivist Hermenuetic phenomeno-logical method-ology Case study	18 graduates from 6 health pro-fessions	Purposive sampling	Professional socialization Professional identity Professionalism Knowledge and skills Social value Education	Professional identity is maintained even though professional knowledge and practice boundaries become permeable. Professions are traditionally premised on specialized knowledge and related skills Professionalism focuses on a "way of thinking and being" linked to a way of viewing the world Professions collectively restrict access to social status and remuneration associated with the societal value placed on the exclusivity of the knowledge and skills Education maintains and reinforces professional values, attitudes and behaviours No conflict of interest	Professional identity is strengthened through the communication of a distinct professional perspective Health professions maintain distinctive practices and members are expected to adhere to norms and codes of conduct enforced and overseen by accreditation and regulatory bodies specific to their profession Early professional socialization by educators whilst still important needs to be countered with early IPE delivery to enable them to function as part of a team	Attention to IPE in early professional socialization will prepare the graduate for practice in interprofessional teams

Richardson, S & Asthana, S	2005 UK The role of Professional culture	10	Literature review	Not disclosed	N/A				
Currie, G., Finn, R. & Martin, G.	2009 UK Changing organizational culture and new workforce roles	11	Qualitative method Interviews Comparative case study approach Pilot study conducted Iterative analysis – thematic	4 sites 36 semi-structured interviews	purposive	Professional jurisdiction/boundaries Professional organizational culture Inter-professional competition Intra-professional competition Occupational closure	Process of change may be constrained or consensual but are tied up with issues of power, status and control. The extent to which a profession uses the capacity to influence and enact occupational closure is crucial to implementing change. Occupational closure is based upon a distinctive knowledge base held by a profession. This allows the profession to claim jurisdiction over a distinctive professional domain (professional monopoly) The process of stratification as seen in medicine create sub-professions with considerable power differentials between groups	New roles for healthcare professionals represents a considerable challenge to traditional roles threatening existing professional jurisdictions and identities Modernization policies will not succeed where they challenge professional interests too strongly. Fundamental reforms to the division of labor will only be achieved consensually Intra-professional boundaries are just as entrenched as inter-	There is a research gap for the impact of workforce modernization upon pre-existing professional cultures in the NHS. There is much written about occupational closure and jurisdiction conflict at the institutional level (macro level) but not at the micro-level – it is necessary to examine the dynamics of the professions. Another area for research is the inter-professional boundaries within a given occupation.

							Professional identity is linked to occupational closure – enhances exclusivity reliant on a particular domain of competence.	professional boundaries.	
Henderson, I., Mathers, S.A., McConnell, J. & Minnoch, D.	2015 UK The impact of changing roles, skill mix and shortage of radiologists on the profession of diagnostic radiography	12	Mixed Methods Question-naire and telephone interviews Thematic framework for interviews Descriptive and quantitative stats from Q Ethical approval	Quest. response rate of 36%= 40 Telephone interview = 8	Purposive		Advanced and extended role Professional protectionism AFC framework Professional protectionism	Skill mix and role changes are prominent features of health policy development As AHP roles are extended there is some resistance from the doctors AFC boards who are more affluent can award higher bandings to attract and retain key staff whilst cash strapped boards can under-band to keep staff costs low No conflict of interest	Professional resistance to change or protectionism, is apparent across a range of healthcare disciplines where workforce change is being advocated. The rate of change is linked to changing attitudes and the changing clinical environment.	none

Descombre, T., Kelliher,C. Macfarlane, F. & Ozilgin, M.	2006 UK Reaction to the re-organizing of work roles in health care	13	Case study 18 semi-structured interviews Thematic content analysis	3	Theoretical purposive sampling	Functional flexibility Occupational boundaries Professional identities Specialization Trust	Proposed new ways of working in the NHS can be blocked due to anxiety, territorial and protectionist behaviour No conflict of interest	Working across boundaries raises issues of identity and belonging Where resign of work erodes demarcation between professions with strong traditions of occupational identity the issues of external perceptions may be as strong as the perceptions of those involved	
Ward, P.	2006 UK The role of allied and compli-mentary professionals in health provision	14	Field trial	1 site		Skill mix Protectionism Occupational culture Articulation of roles	Important for team members to understand their separate but inter-related roles Existing professionals may fear the prospect of finding themselves with 'new' professionals This leads to protectionism Different interests, professional values and occupational cultures can militate against collaboration especially when professional identity and exclusive practice is challenged	With workforce planning, there are as much political as professional concerns	

Timmons, S. & East, L.	2011 UK Uniforms, status and professional boundaries in hospital	15	6 Focus groups Interpret-ative Symbolic inter-actionist Thematic content analysis	I UK hospital sample size 30	Purposive	Uniform as an artefact of a profession Professional hierarchy Change and conflict Professional tribalism Occupational defensiveness	Ethical considerations articulated Validation and verification undertaken The introduction of a homogeneous uniform was perceived as an attack on professional identity and status within their own professions Professional identity was symbolized by the uniform	Uniforms are one of the key ways that occupational boundaries are enacted in practice – indicating status and hierarchy within each group Status is constructed within and amongst professions and comparisons are made Medical profession are arbiters of status for other professional groups	The importance of medicine determining status and how relative statuses of non-medical healthcare professions are determined requires further research
Baker, R.	2006 UK Professional regulation; standards, criteria and thresholds	16	Case Review	Shipman inquiry	**with reference to medical practice**	Threshold standards Fitness to practice Regulation	Developed standards, criteria and thresholds can lead to precise statements about acceptable, unacceptable and seriously unacceptable conduct or practice. The threshold is the level of non-compliance with a criterion which provide a basis for professionalism Bias: author was a witness in the Shipman inquiry	Threshold standards should be made by all stakeholders: patients, managers, policy makers, profession and public.	Whilst the medical profession should retain authority over the threshold standards a consultation with all stakeholders is important to increase trust Development of detailed standards would be influential in improving regulation

Bate, P	2000 UK Changing culture of a hospital: hierarchy to networked community	17	Action research Case study Ethno-graphic data Loose structured interviews Focus groups Participant observations	1 site West of England NHS Interviews = 100 parti-cipants 50 focus group interviews	**Collected over 2 year period**	Change Structure Culture	Friction conflict and disharmony between managers and professional with regard to orientations, values and interests are endemic Culture of tribalism is insidious – separatist organization with subcultures Demarcation and jurisdiction feed protectionism Allegiance to one's profession is extremely strong No conflict of interest	The balance of power in hospitals remain with the doctors being paternalistic and authoritarian Organizational cynicism can create resistance through disaffection Professional cultures and defensive cultures Networked cultures require considerable co-operation and negotiation –working towards unification	Cultural roots in "mindsets" such as tribalism, individualism and conservatism which are a subset of managerialism and professionalism. Cultures are created interactively and can only be changed interactively
Evans, L	2008 Uk Professionalism Education focus	18	Review	N/A	**Not given**	Professionalism Professional culture Professionality	Professionalism concept: lack of consensus regarding its meaning – means different things to different people. Professionalism is a social construct Substance of professionalism – homogeneity of values and viewpoints No conflict of interest	Professionalism is best understood in context Critical analyses of professionalism is best understood by the value of the service offered by the members of the occupation to those in power Professionalism is about the quality of practice Lies in the profession's collective remit and responsibilities Professionalism consists of attitudes	Professionalism is constituted largely of professional culture however it is fundamentally the expression of what is required and expected of its members Professional development requires changes to professionalism – knowing how to effect change is dependent on knowing, and understanding how the community operates

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								and behaviour towards one's occupation	
Ferris C	2005 UK DProF Thesis Development of Specialisation in Diagnostic Radiography – concepts, contexts and implications	19	Qualitative Semi-structured interviews Thematic analysis	31	Phase 1: criterion-based purposive sampling = 21 practitioners Phase 2: theoretical purposive sampling = 10 leads in radiography	Specialist practice Characteristics of specialist practice Devolved skills and power	Specialist practice is identified by imaging modality Specialist practice is characterized by full time commitment, capacity for the subject to divide, challenging practice, autonomy, need for additional training and education. No bias identified	Some confusion as to what constitutes a specialism in radiography. Perceptions about specialism in radiography originate in exclusive and restricted practice	None

Van Mook et al	2009 EU Concept of pro-fessionalism and professional behaviour	20	Review	No details	Medical profession	Definition of professionalism – character traits and observable behaviour Professional behaviour	Lack of consensus on the definition of professionalism Measurement of professionalism – observable behaviours ok but inner intrinsic qualities create a challenge Concept can be traced back to Hippocrates	Altruism, respect for others, honor, integrity, ethical and moral standards, accountability, excellence and advocacy/duty are common values of professionalism Some also include autonomy, self-regulation, competence Disconnect between professional attitudes and professional behaviour	No universal understanding of what the term means – no one definition is applicable across all contexts To assess professionalism both holistic and focused, subjective and objective methods must be employed A need to assess inner values of professionalism as well as professional behaviour
Donaghy M & Gosling S	1999 UK Specialisation in physiotherapy	21	Review based on 2 papers	N/A	N/A	Specialism Specialist recognition Attributes of specialists Special interest groups (SIGs) Desirability of specialization No conflict of interest	Lack of consensus on the use of the terms specialization, specialist and expert Tension between a drive for practitioners in discrete areas of advanced professional practice and the demand for practitioners with broad clinical expertise Do the terms expert and specialist mean the same? It is suggested they are not - a specialist will inevitably be an expert but an expert need not be a specialist. Specialization can lead to inequalities within professions in terms of status	SIGs fulfil variety of roles, fora for debate, points of reference and networks for exchanging professional information and advice, standard setting The notion of specialization is vague and subject to varying interpretation Knowledge is a vehicle to specialization A common focus for literature is to define the characteristics that differentiate between an expert and a novice	An outcome based framework could offer a route to articulating and recognizing specialist practice Need to define specialist and expert

							and pay and accusations of elitism The term expert and specialist are associated with a higher level of practice		
Woodford A	2006 Uk Skill mix and blurring of professional boundaries for greater workforce flexibility due to shortages	22	Literature review	Medical databases	From 2000 – 2006 Peer reviewed British policy, research and opinion1 Exceptions 2 in Hong Kong	Role development Work force initiatives 4 tier profession Attitudes of health care professionals	The NHS Plan, NHS Cancer Plan political drivers for skill mix Radiography workforce issues and increasing demand for imaging Looked at reporting, CT and mammography services but not ultrasound	Catalyst for extended role and skill mix Role of medical and other health care staff have become less delineated; role development, role expansion and skill mix being fundamental	Implementation of the 4-tier structure has been haphazard and lacked uniformity

APPENDIX 8 – DPS1- Ethical Approval and Risk Assessment

DPS1 (2013-14)

Sheffield Hallam University RESEARCH DEGREES SUB-COMMITTEE ***APPROVAL OF RESEARCH PROJECT AND SUPERVISORY TEAM IN THE RESEARCH PHASE OF THE DOCTORATE IN PROFESSIONAL STUDIES***	**For Graduate Studies Use Only** Date Received:

This form should be word processed or typewritten if at all possible. Please read through the form before completing it.

1 CANDIDATE DETAILS

Surname:	Mitchell	Female* (*delete as appropriate)	*Female*
First Name(s):	Pauline Ann	Date of Birth:	03/10/1966
Lodging Address:		Permanent Home Address:	
		19 Runnymede Avenue Westwood Kingswood Parks Hull HU7 3FZ	

Present Place of Work:	Sheffield Hallam University
Post Held:	Senior Lecturer

Qualifications

	Qualification 1	Qualification 2	Qualification 3
Awarding Body:	Sheffield Hallam University	Sheffield Hallam University	
Degree/Award:	MA	PG Diploma	
Classification/Grade:	Pass	Pass	
Subject:	Assessment, learning and Teaching in Higher	Medical Ultrasound	
Date of Award:	2009	1999	

Experience

Other Relevant Training and/or Experience/Details of Published Work etc:

Mitchell, Pauline. Brown, Naomi. 2012. Ultrasound. In: Ramlaul, Aarthi. Vosper, Martin. *Patient Centred Care in Medical Imaging and Radiography* Churchill Livingstone pp 183-189

Mitchell, Pauline. 2003. "Life Long Learning Your Responsibility or Ours?" *Synergy.*

G.A. Tew[1], J. Moss[1], P. Mitchell & S. Nawaz[2]. 2014. **"Patient recruitment and experiences in a randomised trial of supervised exercise training for individuals with abdominal aortic aneurysm":** *Journal of Vascular Nursing* 2014 Mar; 32(1):4-9.

G.A. Tew[1], J. Moss[1], P. Mitchell & S. Nawaz[2]. 2012. **"Endurance exercise training in patients with small abdominal aortic aneurysm: A randomised controlled pilot study".** *Archives of Physical Medicine and Rehabilitation* 2012 Dec;93(12):2148-53.

G.A. Tew[1], J. Moss[1], P. Mitchell & S. Nawaz[2] . 2011. **"**Aerobic exercise training for patients with early abdominal aortic aneurysm disease: a feasibility study" (abstract) *Journal of Sport Science* Vol 29 supplement 2

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Ethical considerations

Punch (2013) suggests that ethical accountability lies firmly with the researcher and that the academic integrity and respect for all the stakeholders is paramount. The ethical issues will be addressed to ensure that the study will create no maleficence and will promote beneficence

Adherence to university ethical governance

The project will be undertaken within the Sheffield Hallam University ethical governance framework and will obtain appropriate ethical approval prior to the recruitment of participants and/or the collection of any data. (appended SHURECC1)

Informed consent and the right to withdraw

All participants that are invited to be individually interviewed will be provided with an invitation letter that will include information that outlines the study purpose, the interview process and agenda for the interview. Each participant will be required to sign a consent form that informs the participant that they will have the right to withdraw from the study at any point. Participants who are invited to take part in the second phase of the study will receive further invitation letters and consent forms please refer to Appendix 1 for invitation letters and consent form).

Confidentiality and anonymity

All audio recording and transcriptions from the interview phase and responses to the second phase will be anonymized using a coding system known only to the researcher. The researcher will undertake the transcribing process to limit access to the raw data and therefore ensuring confidentiality. No reference to the participant's name or place of work will be identifiable in the data.

Dissemination of results and ownership

The research interpretations will be owned by the author and Sheffield Hallam University. The results will be disseminated in the form of a Doctoral Thesis and

through publication in peer-reviewed journals or similar; participants will be notified of this, and that the research meets all standards as stipulated by the university and journal about confidentiality and anonymity.

Academic integrity

All external sources of information used within the study will be recognized and documented ensuring academic integrity of any published and disseminated work. All findings will be disseminated in a non-judgmental way and will not be used inappropriately or be misused in any way that might disadvantage any stakeholder, profession or professionals. The researcher will act in the best interest of the participants always.

Reciprocity

Reciprocity is concerned with what benefit the participants gain from being involved with the study (Punch 2013). It is the researcher's intention to provide all stakeholders and participants with access to the research findings prior to publication.

Risk Assessment

The researcher does not envisage any risk for the participants involved in the individual interviews as they will be confidential, anonymous, and undertaken in an environment that is agreed by both the interviewer and interviewee. All documents will be downloaded and saved to the researcher's files and on an encrypted pen-drive. The researcher has identified a perceived threat to the professional standing of the band 7 sonographers that could create some resistance to the development and implementation of a band 5 and 6 sonographer clinical competence framework; this must be managed sympathetically by the researcher presenting the findings of the research in a non-threatening non-biased format.

Conflict of Interest

The research will not be funded or commissioned by an external source therefore ensuring that the findings are presented in a non-biased format and that there is no conflict of interest.

Statement of Research Ethics Your ethics application form will be assessed at the same time as this DPS1. Please check that the form is appended to this DPS1 and tick the box to confirm that it is complete.	√ ………………………………… ………………………………… …………………………………

Recommendation by Supervisory Team

We/I support this application and believe that the candidate has the potential to successfully complete the programme work proposed and we/I recommend progression to the Research Phase of the programme.

Director of Studies:		Date:	
Academic Supervisor:	*Pauline J Reeves*	Date:	**21/11/14**
Work Place Supporter:		Date:	

Statement by the Head of Programme – Research Degrees and/or Nominee (Postgraduate Research Tutor)

I confirm support for the candidate's programme of research/MProf Dissertation by the Faculty including resources as specified in Section 3. I also confirm that the proposed supervisory team are not responsible for more research students than can be adequately and equitably supervised and that a reasonable period of time is allocated for supervisory sessions.

Signed:		Date:	

Please return the completed form The Graduate Studies Team, Sheffield Hallam University, City Campus, Sheffield, S1 1WB

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APPENDIX 9

Approval Form DPS3

Sheffield Hallam University

Secretary and Registrar's Directorate
City Campus Howard Street
Sheffield S1 1WB

GT/RDSC/EXAM CAN
4 July 2016

Tel no: 0114 225 4047
E-mail: rdscadmin@shu.ac.uk

Miss PA Mitchell
19 Runnymede Avenue
Westwood
Kingswood Parks
Hull
HU7 3FZ

Dear Miss Mitchell

Approval of Examination Arrangements and Thesis Title

I am pleased to inform you that on 29 June 2016 your examination arrangements and thesis title were approved by the Research Degrees Sub-Committee (RDSC)/Chair of RDSC.

Your examining team will consist of the following people:

Internal Examiner: Dr Hilary Piercy

External Examiner (1):   Dr Fred Murphy, University Of Salford

External Examiner (2):   Dr Louise Stewart, Heart of England NHS Foundation Trust

In accordance with the University's Research Degree regulations, please note that you must not have any contact with the examiners prior to your viva.

The thesis title approved by the Research Degrees Sub-Committee is:
The Future of Sonography: Power and Protectionism

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Course: 66RDPRST01R1   DPROF PROF STUD

Stage: THESIS EXPECTED

Start of Registration: 27/Aug/2012

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Total Days Suspended:
Days Extended including Days Suspended:
Days Left: 1122

Full Title of Thesis:

The Future of Sonography: Power and Protectionism

If any of the details on this form are incomplete or incorrect please contact:
Student Systems and Records (Research Degrees), Oneleven Building, City Campus, Sheffield, S1 1WB

APPENDIX 10 – Participant Information letter

Pauline Mitchell
Senior Lecturer Diagnostic Imaging
Faculty of Health and Wellbeing
Sheffield Hallam University
Robert Winston Building
Broomhall Road
Sheffield
S10 2BQ

Dear

I am currently undertaking a Doctorate in Professional Studies at Sheffield Hallam University and I am writing to invite you to consider participating in a study that I am intending to undertake.

The current workforce in ultrasound has been reported as unsustainable and the profession has been encouraged by service, education commissioners and the professional bodies to explore ways in which the deficit in the ultrasound workforce can be addressed. This study intends to explore the potential for the introduction of graduate sonographers as an option to address the lack of sonographers within the Health Service. Professional opinion as to what would be the required clinical competencies that define the clinical role for a band 5 graduate and band 6 sonographer will be critically analyzed. The challenges posed by gaining professional consensus on a clinical competence framework that defines the clinical role for sonographer practitioners will be critically explored. It is hoped the study will provide new knowledge concerning the current position of the sonographer workforce in the UK that will inform workforce planning initiatives for the future.

The aims of the study are:

- To map the band 7 sonographer role and create a hierarchy of competencies.

- To critically appraise the possible clinical competencies for bands 5 and 6 sonographers

- To explore the challenges for developing a complete clinical competence framework for sonographer practitioners.

The study will involve undertaking individual semi- structured interviews with consultant, lead, locum, part-time and band 7 sonographers currently practicing in the clinical field. All interviews will be undertaken at a date, time, place or format (telephone or skype) convenient to you and will be completely confidential and anonymous with no reference to you or your place of work in the research findings. The interviews are envisaged to last no more than 40 minutes and will involve exploring your professional opinion only. You will have the right to withdraw at any

time in the research process and to refuse to comment on any question without any recrimination.

If you are interested in being involved in this innovative and forward-thinking study or require any further clarification please contact me via the email address provided below. If you are involved in the initial phase you are under no obligation to continue to participate in the second phase of the study.

If you are willing to be a participant I have attached a consent form for you to complete, sign and return via email.

Thank you in anticipation
Yours sincerely

Pauline
Miss P A Mitchell DCR (R), BSc (Hons), PG Dip MUS, MA
p.mitchell@shu.ac.uk

APPENDIX 11 – Consent form

Exploration Band 5 Graduate Sonographer and Band 6 sonographer practitioner expected clinical competencies

Please give your consent to participating in the study by placing a cross in the appropriate box

	YES	NO
Have you read the letter of invitation to participate in the study?	☐	☐
Do you understand the aims of the study?	☐	☐
Have you been given the opportunity to ask questions?	☐	☐
Have you received enough information about this study?	☐	☐
Do you understand that you are free to withdraw from this study at any time either with or without reason for withdrawing?	☐	☐
Do you agree to take part in the individual interviews for this study?	☐	☐

Please send this completed form to p.mitchell@shu.ac.uk and keep a copy of this form and the information letter together.

Signature of participant …………………………………………….

Print Name ……………………………………………………………… Date ……………………….

Signature of Researcher ………*P. A Mitchell*……………………….Date …………………

APPENDIX 12 – Participant Characteristics

P number	Practicing sonographer	Advanced Practitioner	Consultant practitioner	Locum	Ultrasound manager	Ultrasound academic	Full-time	Part-time	Professional background	Main Areas of clinical	Years of practice	Location
A	√	√			√		√		Radiographer	Abdo Obs	30+years	Notts
B	√	√				√		√	Radiographer	Obs Gynae Abdo	15+ years	Notts
C	√	√			√		√		Radiographer	Abdo Gynae	15+ years	East Yorks
D	√	√				√	√		Radiographer	Abdo Gynae	20+ years	Herts
E	√		√				√		Nurse	EPAU	20+ years	South Yorks
F	√	√				√		√	Radiographer	Obs Gynae Abdo	20+ years	Lincs
J	√	√		√			√		USA sonographer	MSK Neonatal hips Abdo and Obs	5+ years	London
H	√	√				√	√		Midwife	Obs EPAU	20+ years	Northern Ireland
K	√	√					√		Radiographer	Abdo Vascular MSK	20+ years	NE Lincs
L	√	√					√		Radiographer	Abdo Gynae Vascular	20+ years	Yorks

Appendix 13

Sample of Face to Face interview transcriptions

Interview Transcript

Participant B

Interviewer:	Can I confirm that you have seen the information sheet and you have given me consent to be a participant in this study for the interview phase?
Participant:	Yep
Interviewer:	Can you clarify your professional background?
Participant:	My professional background is I was a radiographer and then I did further training to be a sonographer after about 8 years and working as a senior radiographer. I've been a sonographer in ultrasound since 2003
Interviewer:	Ok and within ultrasound what are your areas of expertise?
Participant:	Mainly obstetrics, gynae and abdominal work and I do a little bit of DVT scanning in vascular and then a tiny bit of MSK doing baby neonatal hips but very limited
Interviewer:	ok so that's just given me some background about you as a professional so we will go into the interview questions now. They are fairly well structured but of course if you want to bring anything else into the interview then please feel free. Ok so what I would like you to do now is to err think about clinical competence and how you would define clinical competence?
Participant: (long pause - no eye contact) (looking at me now – voice low and deliberate)	I think that's very difficult to define in one sentence. Errrm it depends on the role that you do. But I think clinical competence is that you are capable of working and making decisions within your defined scope of practice as defined by your job description which would will vary greatly from one person to another. Errm it depends on where you work and what you are doing errm. For example, one sonographer might be doing musculo-skeletal ultrasound and doing injections where as I would not be competent to do that although I'm also a sonographer so I think its guided by your job description and your clinical role.
Interviewer:	So, it's kind of linked to what you are saying there that are there key areas of clinical practice that can be used to determine competence?
Participant: Sigh and pause Head to one side and speech quickened	I think there are some things which are more universal than others so if you look at something like communication skills; that being competent in that could be the same across several different professionals in terms of your confirmed communication skills, your written communication skills with your reporting and things like that so those things could be applied across several individuals – When it comes to actual clinical things there are some again basic things like use of equipment that would be potentially universal or errm if you look at one clinical area you can define things that are errm sort of the basics of ultrasound so in terms of acquiring an accurate measurement for

Pause Smile at end of statement	example or errm acquiring a standard set of images for a dating scan or an anomaly scan you can compare one person to another with those but within ultrasound in particular it is very very difficult to have one defined set of things that make you clinically competent because the roles vary so much within departments. Errm but I think if you start breaking it down and looking at different clinical areas like obstetrics for example or abdominal ultrasound you could have a defined set of things like we do with when we assess the students as they say – ok to be clinically competent means that you must be able to achieve this image or achieve this measurement or you can break it down but it would take a lot of detailed work I think to do it errm so you can to an extent errm but I also clinical competence as well is you might be competent to do one thing and without being supervised whereas something else you might need to have supervision or a second opinion depending how complex the case is – something about knowing your limitations as well as being able to do things – knowing when to ask for help
Interviewer:	So just going back to that comment why would you say that some things you might be supervised in and how would you identify them?
Participant:	If you're for example acquiring a new skill like you're competent to do MSK ultrasound scans but you want to start to do injections so like you're expanding your practice or your areas of practice then you would obviously need to find supervision and defined study in order to increase the areas that you are competent in errm so it's for acquiring new skills or if for example you're an inexperienced abdominal sonographer and you find something very unusual then you need to know that it's something you've never seen before and recognize its not normal and its quite appropriate to ask for a second opinion from a radiologist but you need to know within yourself when you need that second opinion and when you can say OK well it's definitely this
Interviewer:	So that's very linked to errm recognizing your limitations
Participant: Head nod in agreement Smiling and giggle	Yes, very much so and I think that part of being competent is knowing where your ability finishes and where you need to get someone else to come and help no matter what your role is or how complicated your role is you know even radiologists go and ask other radiologists for help so it's important you recognize your limitations – I think a sonographer who doesn't think they need help is a bit deluded – you will always find things you have never seen before and things you need to go and look up in a book or ask somebody else about or ask a second opinion for
Interviewer:	Ok so like expanding on that then so what do you understand about the meaning of clinical competence and skills and how they are linked?
Participant:	I think people who work in clinical practice need to have appropriate training and appropriate education to allow them to do whatever their role

Direct eye contact	is – and – that's easier in professions where it's a protected title and its more defined – with ultrasound its more difficult because it isn't a protected title and lots of people use ultrasound in limited ways so - if you just look at my role as a sonographer its quite straight forward because I did the PG Dip in ultrasound and I work within a defined area of ultrasound in a radiology department and ultrasound is all I do all day and I know what to do and how to report and what I can do and what I'm not confident to do – but because ultrasound can be used by other professionals to do all sorts of other things like anaesthetists use for looking at the spine when they are doing spinals or err vascular access , accessibility and its more difficult to define what exactly competence is in ultrasound for other professions who just use it in a a very limited scope- and there is no framework out there to says right so if you are going to use ultrasound of the spine you should be able to do this, this and this with the machine and this and this and this with errm the position of the patient and acquire images A , b and C it's not as straight forward as that and I am concerned that because there is that lack of definedness that some people who use ultrasound aren't necessarily clinically competent because there is nothing to compare them against – they are just using it within their own practice without any framework or any supervision or anybody checking that they're doing things correctly and err I think in that world ultrasound can be not always used well In my practice its easier its within radiology and within a framework and I work to a protocol for each examination so it's much more defined errm so I know if somebody comes from the urology clinic that I need to look at the kidneys and the bladder and the Abdominal aorta if they are over 50 years of old and that's all written down and I know exactly what images I should be acquiring and what measurements are expected to be put in the report and its very defined - I know exactly what I'm supposed to do for that - but somebody comes along and just uses ultrasound once a week to look at a spine to put in a spinal needle and does anaesthetics the rest of the time you kind of would kind of question who taught them and are they actually competent to use it as well as it could be used
Interviewer:	So, back tracking to the first point you intimated that the skills competencies – clinical competencies that make you competent are very much linked to imaging, machine use
Participant:	Yeah I think it's a combination of – I think you need good communication skills as part of being a good sonographer and being competent to inform people both the patient and the person getting the report properly – use of the equipment errm so using the equipment to optimize the image for each individual patient as best you can and using the correct set ups and things errm requiring good quality images if that's what you are required to do within your department – not all departments take images for everything but images to represent the quality of the study the measurements you've taken any pathology that you've seen to back up your report errm also competent to make a decision about what you are seeing on the screen so you are answering the question you are being

	asked from the referrer and that you are doing the appropriate examination at the right time with the correct prep errrm to get the best possible answer and sometimes the answer is ooo I'm sorry I can't tell you this it needs further imaging or something else there is a pathology but we don't know whether its benign or malignant you need to do Ca125 clinical tests if it's an ovary or a CT scan if it's something you've seen in the liver or anything else errm so it's about recognizing the limitations of yourself and of your imaging modality errm and knowing when other things might be appropriate and when you need to seek advice for other things
Interviewer:	So, what knowledge sets do we need to build these skills and competencies?
Participant:	Errm – you need a good knowledge of the anatomy and physiology of whatever you are looking at You need a good knowledge of the equipment – how it works and what the controls do and not just press the one little button that is automatically optimizing the image for you – you actually need to know what the machine does and how it does it
Interviewer	Why do you say that?
Participant:	because I think the equipment is getting more and more sophisticated and it's very easy to just press the button- different machines call it different things but press the button that automatically optimizes the image but without understanding what it's doing doesn't always optimize what you wanted it to so you need to understand as a sonographer as the machine is changing multiple things its changing the focus and the gain and something else its changing multiple things and I think you need to understand how that works because it won't always give you what you wanted and when it doesn't you need to know what to do to compensate for – the computer can only do so much – the person needs to be in control of the computer and not the other way round
Interviewer:	So, what impact does that have on the – the imaging episode?
Participant:	I think if the machine isn't set up correctly you've got the potential of getting suboptimal images and potentially missing pathology or inaccurate measurements
Interviewer:	So that's very much linked to the skills and the competencies?
Participant:	Yeah and the outcome of the examination you want to get the best examination possible for that that person at that time and answer the clinical question and if you get suboptimal images with poor quality in terms of position that you are in and the way the image is set up and the how you are measuring things a mm or 2 can make a difference to the clinical outcome for that patient when you're looking at an aneurysm or a

	tumor growth or other things so it's important that you get the best that you can and to do that you need to understand what you are doing with the equipment and what you are doing with the angles that you are taking the measurements from to give them an accurate answer or as accurate as you can with the modality that you've got
Interviewer:	So, you've got knowledge and you've got equipment manipulation and knowledge is there anything else?
Participant:	Errmm I think part of it is sort of understanding your limitations is important so knowing what you are able to make a decision on and what you are not errm – being to be able to communicate well with your patients to optimize your examination and in terms of getting co-operation and understanding and yeah and making them – not just making them comfortable but you can get better images by getting their co-operation with in terms of the position they're in or holding their breath or other things errm and also reassurance side of things that if you haven't communicated well and you've got a very anxious person that you are trying to scan and they are distracting you because you haven't explained things properly you haven't reassured them like they wanted it can impact on the outcome of the examination because your concentration can be affected because you're constantly being distracted by the person you are trying to scan – rather than them co-operating and holding their breath and having had the chance to ask the questions before or after and they know what's happening and so – I think that's important errm In term of their clinical skills obviously if you are going to be doing advanced skills like joint injections you need to be able to errm sterile procedures all these other things but that will be defined by the role that you are doing it's not something I would do Like some sonographers may do things like amniocentesis and things like that so you would need additional clinical knowledge and skills to do those things
Interviewer:	Ok coming back to the communication you've very much concentrated on patient communication are there any other communications
Participant:	Yeah – you need to be able to communicate with the referrer and understand what they want – so you need to be able to interpret the referral appropriately if you don't' have the right information to go and get what you need to perform the right examination and the report is very important because it needs to be clear and not ambiguous errm sent on time so that the quality of your writing and follow up after the examination is very important so that you know when to communicate something as being very urgent or errm uncertain or a definite finding on ultrasound you need to have that spelled out very clearly in the report and I think some - when I first qualified that was one of the things I found most difficult was actually writing the report – I could do the examination and measure everything and then actually describing it properly and coming to a distinct

	conclusion that wasn't able to be interpreted in more than one way was a difficult thing to learn errm particularly reporting pathology
Interviewer:	And what particular skills do you need to be able to give an appropriate report and advice for
Participant:	I think you need to understand where the request has come from so you may report it slightly differently for a GP then if it was a specialty consultant so you need to know who it's going to and where it's come from in the 1st place errm I think things like basic language skills are important it drives me mad when I see spelling mistakes in a report because most of it you're typing on a computer and it underlines it in red and people don't bother to go and double check errm or when it's the wrong word or a word left out and I attempted to use Dragon at one stage the voice recognition – but I didn't like it for reporting errm I could type faster than it was able to err interpret me talking and errm it used to put in a lot of mistakes and put in substitute words sometimes and if you didn't notice them errm - and instead of an or little things like that - could change the meaning of a sentence and that could potentially impact on the conclusion of your report or the interpretation of your conclusion – I didn't trust it -
Interviewer:	Ok So, we've covered quite a wide range of competencies there what are the key clinical competencies that define the clinical role of a band 7?
Participant:	Errm – working independently and making decisions independently on the majority of things that you do so – coming to conclusions on your reports and verifying them without having to have them checked Errm making decisions on what kind of examination you're going to do errm so it's you have more responsibility in decision making I think rather than just working to a fixed protocol for every single examination doing the exact same thing every single time - so you can vary what you do depending on what the situation is and that you know enough to be able to come to a conclusion with your reports that clinicians can act upon without a second opinion So, when there's pathology you can report it without having to check with someone else all the time - sometimes you will need to do but that your report is verified and acted upon without any other input I think is one of the key things
Interviewer:	So, in your opinion the defining role is around reporting and decision making
Participant:	I think the decision making is the key thing errm ultrasound is a bit different to the other imaging modalities in the you make the decision about the report as you are doing the scan it's a very dynamic process where as with MRI or CT scans there is a set of images acquired and then you can go back and forward through them as much as you like to write

	your report retrospectively – ultrasound isn't like that errm the decisions are made as you are doing the scan and yes you take some images but if you haven't taken a picture of it it's not going to be on the report if somebody else come to look so errm it is a very dynamic examination and errm being confident to say yes I've seen everything I need to and I'm confident in that what I'm going to say is correct and then saying it clearly and making that decision by yourself is sort of the key part of the role I think
Interviewer:	Ok so taking that into consideration in your opinion what could be the role of a band 5 sonographer and obviously the associated competencies that come with that role?
Participant	I think you need to look at what is it a band 5 radiographer do so they could work to a protocol and acquire a particular measurement on something like aortic aneurysm because that's errrm a sort of predictable examination and they are referring for just an aortic aneurysm and for a AAA measurement you know exactly that the patient is coming from such a referral source and they need to have images of this this and this and the measurement needs to be at this angle using these equipment settings and to acquire this measurement and compare it to last time. So they would be able to acquire the measurement and give it to the clinician for the clinician to make a decision about what they are going to do about that so it would be very structured in terms of exactly what they are going to do for each examination and then knowing if something out of the ordinary is seen that they are not familiar with or a measurement they are not able to acquire then they would have to seek advice from a more senior member of staff that should be there to supervise them – so they would need to have somebody available to make decisions on the more difficult cases that they would come across. But they could look at the same thing with for example a viability scan because the department are used to working and had midwives on the fetal medicine unit we used to just do viability scans to check there was a heart present and do a basic CRL measurement at 8 or 9 weeks errm that was all they did but they had a very strict criteria in terms of if the patient had any history of pain or bleeding or if they had errm for example they came across a multiple pregnancy or something more complicated then they came and got a band 7 sonographer to come and give an opinion they could work within that limited scope just to say "yes there is a heartbeat and yes the measurement is approx. this and which is approximately equal to dates" so anything once anything out of that happened or there was a high risk patient a senior member of staff did it so that could be something a band 5 could do.
Interviewer:	Is there any other area that you?
Participant	Errm you could look at things like follow-up renal scans to just do renal lengths on people that come regularly for – children for example - bit

	harder to scan in terms of communication skills but if you're just looking at measuring a bi-polar length to see if it's any bigger or errm even things like doing an endometrial thickness in a PMB clinic where you're getting a fixed section through the uterus and doing a fixed measurement and then the clinicians make a decision of what happens after that measurement you're not making a decision about referring the patient somewhere or making a decision about pathology – you will find pathology but if for example the band 5 person was doing the clinic or 2 or 3 band 5 people doing a clinic - when the measurement is below a certain level you could say right you can do this report or if it's above a certain level they get someone else to come and have a look errm so something like that where it's a fixed measurement I think could be done by somebody that's a band 5 But again, they need, they would need somebody there when they come across other things that they wouldn't be able to add to the examination required
Interviewer:	Ok so we have got 7 and we have got 5 How would a band 6 sonographer differ from the band 5 and the 7?
Participant Frowning	They would have to fall somewhere in between the 2 roles I suppose – so they could do more complex examinations so if you've got band 5 just doing the aortas and the kidneys you could have a band 6 doing an abdominal scan for example but again where they're only allowed to do certain types of referrals or you could have them doing the ones that just say "? Gallstones" and say, "yes there's a gallstone or no there's not a gallstone" - errm so they are making some decision but limited errrm And then again having an opinion that's – it's very difficult to pick apart the role enough and to say when it suddenly becomes band 7 and when it suddenly isn't errm I think one of the things that says band 7 is the reporting of a certain % of your work independently so if you are going to look at band 6 it could be potentially that they could report somethings but not all so - they could report normal renal scans for example errm but if there was pathology seen, if there's a certain number of parameters that happen or anything unusual then its somebody else comes to check it so you could let them do reports like that on a limited basis or things like screening for a detail scan – you could have them – because really all you are doing on the detail scan is ticking the box – yes its normal – no its not – for most patients errm so you are not really making a clinical decision you are just looking at the anatomy and saying yes the measurement is normal, yes the anatomy is normal – you could have them do something like that where it's more of a screening of a larger population and then again high risk or pathologies or are seen by band 7s. Because most of them its repetition of the same thing time after time after time after time after time whereas I think part of band 7 role is that it's not necessarily the same thing time after time so then within abdominal you may have a cancer patient followed by a biliary patient followed by something else, its more of a jumbled but if did get them to do things like a detail scan that every

	pregnant woman has and the majority are a normal examination so they could do and report those
Interviewer:	So, am I understanding you correctly that the difference between the 6 and the 7 is complexity rather than range and the same with the 5 to the 6?
Participant	I think so
Interviewer:	It's not about range it's about complexity?
Participant	I think if you look at doing the roles that I do you have the complexity but you could have that they do something complex but very specific. So, you could have them doing something more complicated but they'd be very very sort of specific to an organized system or errm you could have them just doing reporting DVT's all day errm so they've got a (pause) --- I think it gets difficult in the way the banding system works – if they are doing the reporting for 99% of their DVT scans all week they could argue that they are officially a band 7 so I think its picking apart that agenda for change structure is quite difficult But you could have them doing just something specific but again it's about setting what the limit it is – how far they can go on and do before they need somebody else
Interviewer:	What will set that limit?
Participant	I think you'd be guided by the agenda for change framework that exists for other professions – and looking at sort of how that's used with other professions and then mapping it on to ultrasound Errm like the physios and radiographers and other professions use that framework to define what makes you 6 and what makes you 7 . Errm that can be quite a contention thing to do errm within departments cos I've worked in departments where the agenda to change framework came along and everyone had to be assessed in terms of what bands they were going to be – I used to be on the old framework of senior 1 and senior 2 errm and everybody feels threatened when something like that comes along errm within their job - because they feel like someone's trying to – I don't – assess them and and they're afraid that they will be down banded and you get quite defensive errm but I think you would have to be guided by the existing agenda for change framework that's already in existence and in use in the NHS. I mean most sonographers work for the NHS although that's changing errm but you would have to be guided by what that framework specifically says as and then look a t what do sonographers do and try and match to that because you would have to – but I think that is what you would have to do because that's what's in use for other professions
Interviewer	In your opinion do these clinical competence frameworks whether its agenda for change or the KSF's or the HCPC help to define a clinical role?

Participant	I think they sometimes are to generic errrm they can help define the clinical role to a point but they're designed to be used across all professions and all the professions vary so much. The roles within the departments vary so much depending on what kind of area you work in and what kind of a hospital you work in – I think sometimes they , they can create problems and create a bit of confusion almost because you're trying to make a round peg go into a square hole – it doesn't always match – and even the individual frameworks don't match each other so it can cause problems but they are there and if they are being used and I think you have to use the tools that are available cos you have to start somewhere in defining these roles.. And they do provide a good basis but sometimes they're a bit to generic
Interviewer	Do the professional bodies not have their own professional frameworks?
Participant	They have – I mean I'm not an expert on frameworks but they certainly have recommendations for practice and things – but the professional body will write one document and the agenda for change framework will say one thing and something else and the KSF says something else – it starts to get a bit confusing as to which one is right - and which one you should use -
Interviewer	Which one do you think we should we use if we were to develop sonographer framework?
Participant	I think the professional body would be a good place to start so using sort of the standards for practice that that the Society of Radiographers have but again it's not necessarily the same for every sonographer because the roles vary but I think the professional body would be probably be where I would start to look and then look at the main sort of framework that is used in the NHS to define our job so that's probably going to be the agenda for change or the KSF which ever one is the most up to date and the but I'd probably start with the professional body one because at least that has some input from specifically from sonographers as to what the competencies are and what is expected of you as a sonographer and in your role. I think I'd start there.

There is some guidance to good practice but I mean you've got the best you are probably going to get starting with |
| Interviewer | Ok what challenges do you perceive to be potential barriers to developing a complete framework from 4 up to 8 |
| Participant | Well errm finance in the NHS is always a problem – my trust sent an email the other day saying they are now overspent by an estimated 40 million for this year overspent and they want to cut down on bank agency staff and cut down on this and cut down on that so –errrm
I've also worked in a trust that had a financial crisis where 2 trusts merged together and they were in a major crisis and they had a job freeze errm which puts a lot of pressure on exiting staff and there's financial constraints like that and when people work in that environment when they |

	are under pressure and they feel threatened in terms of their role and trying to change things and introduce new things it makes them feel even more threatened and the profession already has such pressures in terms of lack of staff as it has a 20% national vacancy rate and people already feel a bit defensive about their role and I think it will be difficult to completely change it quickly errm with radiographers it kind of naturally evolved over time that they took on new roles gradually and the framework kind of evolved after that and people were already doing more advanced roles in terms of starting to report and sort of what a senior 1 sort of did the x-rays and someone else might do the report on them where there was already that variation in roles existing whereas in ultrasound they're already – most people are at band 7 already so trying to either get them to give up some of their role for a band 5 to come and do and they feel like they've given away some of their job which is the way radiologists used to feel one time with sonographers errm – they could feel quite defensive about that . I see it as an opportunity for if someone comes along and does some of the part of the job I do now in terms of if someone came in and did all of my anomaly scans it would leave me free to do something more exciting - and potentially advance my role further because there is a shortage of radiologists as well and sonographers are cheaper than radiologists so there is a potential for sonographers to do things like MSK injections and lots and lots of other things even biopsies and things in the neck and if sonographers want to advance they have to give up some of their other role in order to be able to do that but I think generally people are quite defensive and reluctant about changing their role in a major way so I think it will be hard to get everybody on board and agreeing Errrm – I think it's going to come one way or another because there's already plans in various universities to introduce direct entry errm training and things and those trainees are going to have to go somewhere and the way that departments are currently running it's such a – with reduced number of staff and a lot of agency staff and like ---------- hospital lost their contract for GP scans cos they just don't have the staff to do it – its nearly all private now in the -------- area where I live errm it has to change – its going to come one way or another errm I think we need those frameworks there to support that change but I think any major change like that to a profession will be difficult - I think one of the other things is that is the fact that it's not a protected title so anybody can come along and pick up an ultrasound machine and say errm oh yeah, I qualified to do ultrasound so I think that I a bit of a sticking point
Interviewer	Would this be a way to create a sonographer profession?

Participant	I think it would to give it more definition and make it more comparable to some of the other professions within the NHS - Errm I think it would be a step in the right direction towards giving it a more defined recognizable errm framework and errm - it would make it more comparable to other groups like physio and radiography and other things - I think it would be potentially be a way towards that but I don't know if we'll ever – it will ever manage to achieve it because of the way ultrasound is so widely used by so many different professions and it's getting to be more and more – podiatrists and all sorts of physiotherapists and also people wanting to use ultrasound within their practice - I think it won't be defined in the way radiographer is - so you have to be a radiographer to press that button I don't think it's going to be like that - but errm – I mean there is the voluntary register now which again is one tiny step towards recognizing that there might be a need for it but I think it's more difficult with ultrasound because of how it is used because of the differences between that and radiation in terms of safety its more difficult but midwifery used to be regarded as part of nursing and now they have their own recognized profession and but I think we've got a long way to go to catch up with the advances they made
Interviewer	Is there anything else you would like to add?
Participant	Errm – (long pause) I think because ultrasound is such as small community it's a very small number of people – radiographers are small but ultrasound is even smaller – errm – getting everybody in a small group to agree with each other could be interesting - errm
Interviewer	Why do you say that?
Participant	Because it's kind of big fish in a small pond I think errm - you and my idea of a framework and how to improve the profession could be 20 miles away from what somebody else thinks it should be done and somebody who's been in then profession for a long time and thinks it works just fine could be very resistant to changing it errm so trying to get everybody within the profession to agree errm could be difficult I think you would need support from the professional body in the development – I think that would help – errm
Interviewer	So are you saying any consensus on any framework is difficult
Participant	Yeah I think it would be extremely difficult to get everybody to agree – I think you could develop the best framework in the universe and you would find a certain % of the people who would need to adhere to it saying well I don't like this bit and I don't like this bit and that bit is not right for my

	practice - it would be difficult to get it right and even if you do get it as right as possible it's never going to be perfect for everybody. I think if you have the support of the professional body in introducing something like the framework it will help a lot errm but again you've got the powers that be within those professional bodies that have got their own ideas of how to do things and the way the profession should go errm
Interviewer	Ok that concludes what I need to ask you so I just want to recap that You define clinical competence as a very being very much linked to the role and the job specification errm and that 7 is very much defined by autonomous independent practice which is very much linked to reporting
Participant	yeah and decision making
Interviewer	and decision making errm the 6 sits somewhere between
Participant	Yeah where that is - it's difficult
Interviewer	The 5 is also as equally easily to determine the two very different ones in that its very much protocol set standard of what is expected of done and understanding the limitations of when to get someone else
Participant	Yeah, they need someone to be there
Interviewer	You don't feel that the difference is linked to range its more linked to complexity
Participant	I think so
Interviewer	And that whilst there's generic frameworks out there they are not necessarily very useful at defining roles
Participant	No no
Interviewer	Errm and the main barriers to probably developing this is around professional gate keeping being a small profession
Participant	A small profession that is already under pressure and a small profession who at the moment are in an environment where people can pick and choose their roles and their jobs and get paid an awful lot of money to work in the private sector and that's eating away of the core of the NHS staff that are there and they're under increasing pressure with workload and things so any changes that come along are going to be stressful when you work in a very stressed environment and under pressure already
Interviewer	So you perceive resistance

Participant	I think there will be resistance from the workforce and there's already a bit of an attitude among sonographers I know who sort of think it's very much well "take me the way I am or leave it cos I've got 5 other people sending me emails every week saying do you want this job, or this job or this job" errm so when people have that choice of opportunity they don't necessarily want to work towards change so they say "oh well you know I'm off bye" I think that's a bit of a
Interviewer	So, they don't see brining in a 5 as helping them it will restrict their choice
Participant	I think if they see the department changing I think they will be afraid that they will be banded down – it will be the fear factor - even if they are sort of reassured that you know we are not going to do anything about your role and we will give you further opportunities I think they will be afraid of the change and feel it threatens their position
Interviewer	Ok Thank you very much

Participant D

Interviewer:	Ok Welcome to the interview – I just want to clarify that you've had the information sheet and you've signed the consent form
Participant :	Yes, I have
Interviewer:	Ok errm just as an ice breaker and to give me a feel for you as a professional can you give me some clarification of your professional background - where you've come from and where you are now
Participant:	Ok originally I trained as a radiographer and worked as a radiographer then I specialized in ultrasound errm and even when I qualified in ultrasound I always worked in a dual role – I had a split post where I did radiography and ultrasound – and then about 10 years ago I started working at the university as the ultrasound course leader – so I've been doing that for the past 10 years and again I teach radiography and the ultrasound but I also maintain my clinical practice so I do one day a week in the clinical department where these days I mainly do Abdo and Gynae scanning because I can't maintain my skills, expertise in everything errm yeah that's about it
Interviewer:	Ok so the study's around clinical competence and looking at band 5 and 6 sonographer practice
Participant:	yes
Interviewer:	Can you errm you help me try and find some errm meaning around clinical competence – so how would you define clinical competence?
Participant: Quizzical	Oooooo – ermmm – (long pause) I guess if I think what a traditional sonographer would be I see the clinical competence as being able to understand the request that is being made and be able to justify the examination, explain the preparation, errm and do the right sort of examination competently and be able to report and interpret those findings – I see that as the whole package of being clinically competent but when you are thinking about a band 5 or band 6 or band 4 or whatever sonographer I don't know that I would expect them to do that to the same level because a band 4/5 sonographer wouldn't have perhaps the same understanding of the justification and the rationale for doing the examination and they might not have the same skills for the reporting at the end but I think they should be able to do the middle bit the actual technical ultrasound examination to a certain level whether that is the same standard as a band 7 sonographer would do it I don't know – I don't know that the band 4,5, 6 would have the same range of clinical where as I guess I would expect the clinical competent sonographer to be able to do a range of examinations - sometimes there are people saying about the band 4 /5 ok they might just be able to do this particular examination or just this particular one so I think its more of a doing certain bits of what we see as the traditional sonographer role if that makes sense

Interviewer:	Ok if we could take it one step back to drill down this clinical competence in not into bands as such but when we say somebody is clinically competent what do we actually mean? Irrespective of what the professional role is or what band they are
Participant: Direct	Then I would say its what I described for the sonographer that they can justify the request, prioritize it, do the whole ultrasound examination and write the report and make referrals so that for me is someone who is competent in ultrasound – they can do that whole package
Interviewer:	Ok so you've identified the key areas of clinical practice that determines clinical competence – what skills or competencies do they need to have in order to meet those key areas?
Participant:	Errm so what you mean errm what do we need to teach them?
Interviewer:	Errm what skills would they need to be able to justify – what skills would they to do a scan
Participant:	Oh ok so I guess they'd need knowledge of sort of anatomy, physiology, pathology errm the pathological processes and pathways so they know that if a patient has got you know that particular symptom that they perhaps need an ultrasound rather than a CT or an MRI so I think they would need a bit of knowledge about other imaging modalities and what ultrasound is good at looking at and what ultrasound isn't good at looking at so I'd expect them to know a bit about sort of the medical background of how other imaging modalities work and how they complement each other - I'd then expect them to know how to operate the equipment safely – how to technically be able to perform the examination and know their limitations so if they were just scanning the kidneys and they happened to see a gallstone I'd expect them to be able to recognize that errm but if they've not been trained to look at kidneys and so they're doing a gynae scan and they've got a really big fibroid – you need to look at the kidneys I'd expect them to know whether they are competent to look at the kidneys or whether they need to ask for a second opinion and get somebody else to do that I'd expect them when they're scanning to recognize normal and common abnormalities and know when to ask for advice or get a second opinion from somebody if it's a bit unusual I'd expect them to know when to use Doppler or not and I'd expect them to know about errm RSI and how to scan a patient in an appropriate position to protect themselves And then with the writing of the report I'd expect them know about how to write academically at that language so they're writing an appropriately worded report – whether it's different going back to a GP or consultant so I'd expect them to have to be able to explain their findings, make a diagnosis and suggest appropriate referral opportunities so they obviously need to know about the ongoing patient pathway of – you can't just say ok there's a polyp – there's a polyp and this patients from a GP I need to suggest gynae referral so they need that background knowledge of the patient pathway

	They also need to have all the skills of patient care and communication and infection control and all of that sort of thing as well to be safe in their examination
Interviewer:	So, these competencies and skills if you was to summarize they are to ensure that the practitioner is safe and will protect the public
Participant:	Yeah – yeah – yes definitely -
Interviewer:	We have a band 7 sonographer at the moment – we have band 4 in a very limited scope and we have band 8 in more of a lead position but looking at the 7 what key clinical competencies would you say define this role?
Participant:	I think it's everything I've said – it's that doing it from before the patient arrives - everything though until after the patient has left – it's the whole spectrum of everything and that understanding of other imaging and other diagnostic tests and how they all link together and so it's all part of the role – I think if you took a sonographer that couldn't do the first bit – who couldn't justify the request forms then I wouldn't say they are a clinically competent sonographer. If you'd got a sonographer that could do the request forms and do the examinations but couldn't write the reports then I'd say they are not clinically competent band 7 sonographer
Interviewer:	So, they work independently do they?
Participant:	Yeah so they are – they have that autonomy to make their own decisions to decide whether they need to refer to CT, rebook and all that sort of thing – but still recognizing when it's appropriate to ask for advice
Interviewer:	Ok so when we look at the band 5
Participant:	yeah
Interviewer:	Which is what we are trying to drill down to – what in your opinion could be the role of a band 5 and then what competencies would they need to do this role?
Participant: smiling	That's a really controversial difficult question – (laughter) – It's something we've been looking at with a view to doing a direct entry or undergraduate programme in ultrasound and we looked from the university's perspective – ok what would we get a band 5 to do and we developed a programme and we developed all our modules and thought what they would need – so we developed a course and we were yeah at the university we can provide but then what we couldn't then provide was the hospital that we could convince that there would be a need for the role. Because they were saying well ok you're going to tell me – we couldn't teach this band 5 sonographer to do everything that a band 7 sonographer does because when they qualify as a band 5 they need that to be able to do that career progression the opportunity to have a post-graduate course to come and do a masters – if they've done everything at a band 5 what are we then going to do with them in the future so we thought ok so they could be more like a sort of technician , a bit more advanced than a band 4 or they could do this but wouldn't do that, they wouldn't write reports and the departments were like well that's like going back to what ultrasound used to be 20 years ago where we didn't write reports, we didn't think and we didn't question and

	they are like we wouldn't want that and we were trying to sell the benefits and they were all like well there isn't any benefits because you still need somebody to write that report and ultrasound is such a dynamic examination you need to do it from watching the examination – if you're just looking at somebody's images they are not necessarily representative of what they have done and you could miss things – so they said well then the sonographer would then write the report would then spend longer looking through the images to make sure they were competent before they wrote the report and put their name on it – you might as well of had them do the whole scan – so I don't know what a band 5 could do because we mapped and said well this is what they do but the departments were like well there's no use for them no- there's no benefit
Interviewer:	Where do you think that comes from?
Participant: Higher intonation	Oooo its tradition and its being protective of their profession and its fear of change errm and its I guess it comes from the some of the assistant practitioners that they had in radiography and they started off as assistants now they worked through and some of the problems that have come with that - and I think it is just that a lot of people that do ultrasound had to do radiography first to do the ultrasound and they are all like ooo I never wanted to do radiography and I wanted to come straight into ultrasound and if they had to do 3 years of radiography and work then everybody else has got to – why should someone new come in and just do it and I think it is just the fear of change – I don't then think they have really thought through and I guess they're thinking in just short term they want somebody to just do the job and do it all without thinking well actually if we trained band 5 then we can do this and we can do that and in the future - I think they are looking to much at their targets and their what they're doing at the moment And they know how the university courses run- they know what product they're going to get at the end of it and they know it works for them. I think it's the fear of the unknown and then it's the whole ok well ultrasound isn't a registered profession so who are these people going to be registered by and where is their accountability, indemnity – you know – regulation going to come from and it's the fear of you know what happens if something – you know this department takes a risk and employs band 5s and then something wrong - I think there's all sorts of things that come into it but I think fear is a big thing and then do what's comfortable and it's actually a lot of work to set up a new programme and to get people to train and to change the way you are teaching when you are doing an ultrasound – not teaching at that band 7 level but to drop it down and its hard work training a sonographer so to have to adapt and train a band 5 is going to be different and they are more comfortable training what they know – not going to use the word lazy – (laughter) -
Interviewer:	Ok so there is some resistance to look at this?
Participant:	Yeah, I think there is definitely errm – I don't think its resistance from the universities – I think it is resistance from the clinical departments because

	they would have to buy into it there's no good us having a university course if the departments aren't A. going to support their training and employ these people when they're qualified and I think it's the departments that are the barrier to it at the moment We sent a questionnaire round a few years ago to you know canvas opinion in our local area and some of them completed the questionnaire appropriately and some of them just scored across the top – we will not have this and we are not prepared to answer any more questions this is wrong How can even the university to consider it and we are very very negative And you would think be sending that questionnaire it would make them think and they would have thought it through but some of them sent it back and said we are not even answering this we don't want anything to do with it . We were really quite shocked by the response of some people.
Interviewer:	Why do you think that they have his attitude of resisting this change?
Participant: Very matter of fact	Because they've always got away with the attitude and they do what they want and I think this is the first time there's been such a big change in the profession that they've not had to deal with it before. You know it started off years ago – ooo people you know radiographers can do ultrasound and its exciting and then they can write a report and then they've not had to face something that's such a big challenge – they've never been in a situation where they've had to think things through – they've always just you know I'm the radiology manager and I'll just do what I want and most of the department is happy and so that's it
Interviewer:	So, with that errm attitude I'm the department manager I can do what I want – where do you think that comes from?
Participant:	I think it's a tradition thing and I think its (pause) I think that a lot of the people that are department managers are not necessarily the right people for the job. I don't – I think it's the department manager needs to be that person who has that mix of management skills and clinical skills and I think a few years ago it was errm and I know a lot of people where you ask the superintendent sonographer - well I was the only one who applied to do the role I've been doing it 20 years so they're not necessarily the forward thinking – they perhaps didn't do a degree when they did their undergraduate training – they're not perhaps as – not that I'm being disrespectful f people who've been qualified a long time or are experienced in their role but sometimes they're not as forward thinking and aware of evidenced based practice and the importance of CPD and they perhaps didn't do the research in their training to look and consider different ways of doing things – I think when we teach students now we really teach to think and to question and to rely on evidence and to do their own research and make their own evidence and so they've so much more got that attitude of oh well we'll try to do this and we'll - you now we'll follow guidelines and we'll do it properly whereas I think it comes from a tradition that people have just for years got a way doing what they want and not having to be accountable to anybody and I think also the

	change to the foundation trusts the hospitals have got to be more accountable is making some people have to think of better ways or otherwise they could just say what they wanted and got on with it
Interviewer:	So essentially its quite a powerful group?
Participant:	Yeah and oh they have all their meetings together where you know no one else is allowed into their little meetings and they decide on what they say happens – you've got to be quite strong person to go into a room full of people who have already had a pre- meeting and decided what they want and you've almost got to like you've got to try and get one on side to then infiltrate the pack. Because they are a force to be reckoned with.
Interviewer:	So, if you say have got nowhere to go with 5 – 6 is then
Participant	You can't have a 6 without having a 5 – yeah -
Interviewer:	So, do you think the profession isn't ready for this change?
Participant	I don't know that the profession isn't ready – I don't think the depart- certain people in the departments don't have the skills to facilitate the change so I think it almost comes back to educating the managers rather than – and once you've got them on-board then you know some of the sonographers might - and I don't think people are ready but I don't know who it is that's not ready.
Interviewer:	We have frameworks within the health service that have from 4 – 8 in other professions even in radiography so in your opinion do errm clinical competence frameworks help to define a clinical role?
Participant	I don't know – errm - I think the whole like 4 tier structure with your assistant practitioners and your practitioners, advanced practitioners and consultants – I think that works - but we don't have that structure in ultrasound because we are almost sharing the profession it's not a separate profession so maybe we need to go back to actually we need a profession and it needs to be registerable with the HCPC then you could have that 4 tier structure – we're trying to get bits of it so the clinical competence frameworks help but they don't help because it's not – we haven't got the 4 tier structure we've got missing bits in it
Interviewer:	Ok so we've just got the 7 and nothing else?
Participant	Well we've got a bit of the 4 and then the 7 and the 8 but we've not got the bit in the middle and therefore it's not a 4 tier structure we're trying to get ultrasound to fit into a structure that works within radiography and physio and other professions but they are professions so we are trying to fit into something that's not there – and then you look at well should ultrasound be profession – should the radiographers that train in ultrasound, should the physio do their bit; should it be tool rather than a profession and that anybody that's appropriately trained could do

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	ultrasound to treat their patients appropriately and then we shouldn't have a certain person do them I don't know whether that really answers your question and I don't know whether I really can answer you
Interviewer:	Agenda for change doesn't fit ultrasound because we've only got 7 and 8 and the 4's – we have other things like skills for health and stuff like that but as you intimated other professions do ultrasound and they have the full raft and they fit their people in but they're not all 7's are they?
Participant	No in other professions
Interviewer:	So, the nurse and the midwives don't necessarily get a 7 for doing ultrasound
Participant	No - But ultrasound – we've made ourselves that elite we're better than everybody else - train in ultrasound and you get a 7 and actually we are – all sonographers are a band 8 errm – and it's just that elite – we're better than everybody else attitude that we've always had that - it's that superiority and again it's that club of like oh if you want to train in CT you can and after a while you might to a bit of on the job training and you if you're lucky you might get to do a PG course but in ultrasound straight away onto a PG ultrasound course and then they get a band 8 its elitism and people are too protective of their profession and actually I think anybody can do ultrasound if they are trained properly my issue is with people who go on a 2 day course and think they can do everything – I think anybody can do it if they are trained but it's who you train and how you train them and don't know there's an answer but I think we're – I think we think we are better than everybody else.
Interviewer	So, the frameworks we've got
Participant	Don't work for ultrasound - I don't think so
Interviewer	Could they be made to work?
Participant	We could have a different framework that would work for ultrasound so what we could say is that ultrasound works but not the frameworks we need to change the framework or we could say the framework works therefore ultrasound profession doesn't work and we need to change that but at the moment the two don't work so you've got to change wither one or the other or both
Interviewer	So, I guess what we are trying to do by looking at 5 and 6 is change the profession structure to fit the framework?
Participant	Yeah, yeah but should we be changing the framework to fit what we've got? But then we could call it a profession there are people who do ultrasound that aren't radiography background or a midwifery or nurse background is that right

	I mean we had a student a few years ago that had a bit of a blip with our admissions process and ended up on the ultrasound course they'd got a placement but actually they're background degree was not quite what we would have picked if we could but came out and did absolutely brilliantly and did far better than any of our radiographers and it really made us think well you know do people actually have to be nurses or radiographers or midwives and its well like they don't as long as they can learn all those things and actually having your nursing or midwifery or radiography background helps you along the way – if you come in with a degree in geography errm you've got to learn so much more but you can get there – And it comes back to that ultrasound is a tool rather than a profession so you can train anybody to do it but it's how
Interviewer	You could argue then x-ray machines are a tool
Participant	Yeah but then they've got the radiation safety around them and I think it's the cop out with ultrasound in that it's not radiation its anybody can have a go with it and I don't think anybody should have a go with it – I think I'd like it to be just us cos we know what we are doing properly but I had a real battle in our university – you know the physios want to have a play and do a bit of ultrasound you know can we have an ultrasound and physio's course and I said yeah some of the radiographers would like to come and play and do a bit of physio so can we have a physio course that the radiographers can come and learn manipulation and they went (gasp) and they were horrified and they were like how dare you're undervaluing what we do and it's like but you're doing the same to us and then they're like no its only ultrasound
Interviewer	That's and interesting concept to explore
Participant	I mean we put in some real arguments about it because they see it as something they can do and learn but yet they're very protective of their profession But when we try to be protective of our profession we're told of and we are told we are just being elitist and protective of the profession but we are like no there is a skill to doing this – it's not just a physio that can buy a machine and play but yeah, it's that real – yeah, its always been a battle between radiographers and physios
Interviewer	We can train to gain that skill
Participant	Yeah but not in a one day course
Interviewer	But your existing sonographers are saying we can't train anybody below a 7
Participant	It depends what you are expecting from it at the moment when we see the word sonographer we think of the band 7 package – it's about having to re-train so we – if we do have a different structure ok the term sonographer

	might cover a range of things but its tradition what we see as a sonographer with the reporting and the everything – you don't get a band 5 radiographer who qualifies and can do CT and can do everything and can go into theatre by themselves but they are still called a radiographer It's just that its traditional – it's what we've known and it's what we are comfortable we're in fear of
Interviewer	**Midwife Sonographers who are band 6's**
Participant Frowning and quieter	You see I struggle with that - I would still call them sonographers if they're trained to do ultrasound and they are working in ultrasound I don't call myself a radiography sonographer you don't call yourself a nurse sonographer they are sonographers but they are so protective of their midwifery background as well they tag it onto their name but all of our people that are in our area that are sonographer irrespective of the profession they've come from they're band 7 when they are students and band 8 when they qualify. So, we have our radiography students that have been qualified a year go into ultrasound and get their band 7 and then they do their course and they get a band 8 within 3 years of qualifying as a radiographer and yet you have people in CT and MR that's slogged out years to get their band 6s and 7s
Interviewer	**Ok do you have a workforce deficit in your area?**
Participant	Yes, hence the 8s – yeah
Interviewer	**Do you think the workforce deficit has an impact on how sonographers perceive a 5/6?**
Participant	I don't know that's the problem with the perception -I think because of the workforce deficit everybody's busy and they use that as the excuse – we're busy we can't do this, we're busy we can't do that – we're busy we can't train somebody – we're busy with this rather than actually think long term if we did this this and this we would fill some of the gaps in the deficit and therefore we wouldn't be so busy. They are so caught up with I mean we've had a lot of local staff where a lot the superintendents have been dismissed and reallocated because they've not been reaching their targets. Errm and so they're so focused on their waiting lists and meeting their targets they won't look at the bigger picture they're just focused in their if I don't meet my waiting lists and I don't manage my staff I'm not going to have a job next month and therefore they won't look at anything else because they are so target orientated
Interviewer	**So, they don't see errm for instance that if we errm manage to even out this workforce deficit so we haven't got one that that actually removes errm**

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Participant	They can't see that because that will take so long for that to happen they're focused on well this month I've got this many patients, I've got this many slots and it doesn't match – how do I fill this. And they're living day to day – they're not
	And from the sonographer's point of view they get paid an 8 now why would they make an effort to train anybody else it's more like hard work– if there wasn't a deficit hey wouldn't all get their 8's so they are not going to support something that potentially means they might get downgraded and their little friends aren't going to get their 8's
	It's all been like there's also a lot of moving around departments – it's like oh well you won't give us what we want so we are all going to leave and go to this department we are going to do what we want and manipulate and then are all going to move to this department.
	So gradually it's that spiral of – I guess it's just bullying and manipulating – it's like if you don't train me in this then I'll leave and if you don't train me in this I'll leave because they know there's that workforce deficit – they're in control they're the ones that are like I don't want to work Saturdays or I'll leave and go work at that hospital - it's just (long pause)
Interviewer	So, whilst we have got this deficit we are not ready to introduce a full framework?
Participant	No because people are too busy doing the job – I think in the departments where you know we have got some departments that are fully staffed they have programmes for study afternoons - each sonographer gets half a day study a week for CPD blah blah blah - they're the departments that have got that time to be forward thinking and planning and they're the ones that are training people slightly differently and doing different bits and have got that plan cos they haven't got that deficit - Those departments that are so short staffed are relying on agency are just getting their head down and working
	So yeah, we've got to solve the deficit problem get all the positions filled and then think about changing the profession
Interviewer	Ok so in summary errrm the clinical competencies around safe practice and protecting the patient and that's drilled down to justification and actually undertaking it and reporting it and having anatomy and physiology and everything to make up that whole package of a competent sonographer.
	At the moment, you don't see a real clinical role for 5 and 6 because they are just not flexible enough.
	But also, departments aren't particularly ready to look at them because
	1. They are busy with getting the work done
	2. They are a very powerful person at the moment
	And you feel that if they are underpinned with 5 and 6's then they won't quite be as powerful which is a reason for sonographer resistance
	So, in your opinion at the moment the sonography profession is not ready for a clinical competence framework – a complete one

Participant	We are not ready for it but there is not real reason why we can't be ready for it – we should be ready for it - but at the moment we are not –but there isn't a reason why we couldn't be ready for it – but there's a lot of work to get us ready to be there and then you think is it worth the work. It actually by time I've actually developed a new course and you know employed and set up anew undergraduate programme I could have trained another 20 sonographers
Interviewer	Thank you is there anything else you would like to add
Participant	Laughter - no I've said more than enough (more laughter)

Interview Transcript

Participant K

Interviewer:	Ok just want to confirm you've had the participation letter and you've signed the consent form
Participant :	Yes, I have
Interviewer:	Just so we can get some background on you can you a brief summary of your professional background – how you came into ultrasound, how many years of practice and the clinical areas you work in?
Participant:	Ok so I started as a radiographer at ….. Hospital within a couple of years of qualification I got the opportunity to train in ultrasound which I knew I liked right from the training part – erm so I did ultrasound the last year of the DMU at …… School of Radiography and errrm and then obviously was sponsored to continue my job here as a sonographer and I've been doing ultrasound probably for about 19 or 20 years now and over that time - I got the DMU as I've said and then I've done further qualifications the MSK certificate, the vascular module- I've been a clinical supervisor for quite a long time now about 7 or 8 years actually I also used to be an NVQ assessor but I don't have time for that anymore (laughter) and just generally extended my skills – branched into other things and helped to teach all of our new sonographers over the years as well
Interviewer:	So, what clinical areas do you do?
Participant:	Errm I don't do obstetrics anymore because the vascular and MSK work keeps me over here – there's more than enough work and obviously all of the errm general radiography you know abdomen and pelvis as well as gynae as well.
Interviewer:	Thank you - the study is around clinical competence and looking at bands 5 and 6's when role and how they fit into existing frameworks we have – but to start of I need to understand what you understand and mean by clinical competence so if you could define clinical competence for your area of practice how would you do that?
Participant:	I suppose it would be errm being clinically competent as in being able to carry out errm a comprehensive ultrasound scan targeted to the clinical need and to be able to produce a diagnostic report that would provide a useful step in that patient's progression
Direct eye contact	So, to be qualified to do that independently and confidently and to know your own limitations and when to – and when more input is required
Interviewer:	So, if we drill further down into clinical competence what in your mind are the key areas of clinical practice – you've alluded to a couple there – that can be used to determine clinical competence so you've alluded to reporting and are there any other areas?
Participant:	You would have to evaluate what needed to be done first of all from your information You'd have to be able to carry that out competently and accurately

	Do your report and then make any recommendations for follow up or alternative examinations within the information you've been given
Interviewer:	So, what skills would you need because clinical competencies are built from skills aren't they? So for instance equipment manipulation and things like that
Participant:	Yeah yeah so – well I suppose you need to break it down into everything you would need so obviously you would have to have a degree of background knowledge to assess the forms that's how you would start You would have to be able to know how to manipulate an ultrasound machines settings and have a good knowledge of errm what it can do and what its limitations are and how to optimise them yourself – know what probe selection, what presets to use errm Then you'd have to have a good knowledge of the anatomy for the scan that you are doing and be able to manipulate the transducer to demonstrate that anatomy and any pathology and errm and then you'd have to know you've done a thorough job or as best as you can at the time Erm and then you'd have to be able to interpret that information into a factual report with and know enough to recommend relevant follow up
Interviewer:	So is that about errm decision making skills?
Participant:	Analytical skills in being able to read the request forms, actually be able to decide if they are relevant clinical indication and what's most appropriate to continue from there so errm so you'd have to have some relevant pathological knowledge and a knowledge of what's the most appropriate course of action for that because you might decide – you might disagree that what they've asked for isn't relevant – like say if they are querying diverticulitis – it it all it says is that then that's not good enough but if they ask you to look for an abscess well then that's different so it's just sort of developing and honing that knowledge which comes with experience as well
Interviewer:	So those key clinical skills would you agree are what defines a band 7 sonographer?
Participant:	Yes, if you could do all that errm with a range of examinations then yes it's a band 7
Interviewer:	So, looking at that in your opinion what could be the role of a band 5 sonographer?
Participant:	I would have thought that they would be somebody who would require supervision or authorization for certain levels of certain details of what they were doing - so that they might even have that knowledge but they wouldn't have the authority to take it independently depending on what part of that is – so they would obviously independently know how to manipulate the controls to obtain an image series but they might have to have their report OK'd by somebody else – who's higher up
Interviewer:	So, they would never work in isolation?

Participant: Frowning	I wouldn't have thought so because I'm seeing it as that errrm – I think that when – if you are doing a scan you have to have all of that bit of knowledge that goes with that package – they are all individual packages that are stuck together and you can't – you can't' – what I'm trying to say is – so each package say ultrasound of abdomen is its own package with all of those different things in it so to be unsupervised completely you'd have to be – do all of those individual bits within in it – so if you was not going to be a band 7 the that's a responsibility kind of grading isn't it then there must be some parts of that package that you can't authorize yourself that has to be seconded to somebody else
Interviewer:	Bearing that in mind are there any clinical areas that you could envisage a 5 working in?
Participant:	Well just from watching students and what they take to and what's easier for them to learn then I would say maybe a straight forward renal tract is definitely a starter level kind of scan errm And providing they would know because I think it's hard to break it down because I think that you are always on the lookout for other than what you're looking for – your always looking globally aren't you and I think it's wrong to break it down so it's not global , however so say you do a kidney scan you don't go looking at the pancreas but you might notice there was a gallstone so that's something that you can't ignore like when you do carotids you might notice a load of thyroid nodules – so that's why I think it's difficult to focus it down like that and that's why they would have to be supervised because they would be able to do their bit and then report to their whoever was with them that they'd seen something else that their not authorized to pursue properly or might need somebody to confirm that they've done the right thing or even just to countersign that they've found it
Interviewer:	So, with that level of supervision do you perceive any benefit for the department having a 5?
Participant:	If you had somebody who – bearing in mind most people who come for a renal tract wouldn't have anything else anyway – I think it could be useful because you've got somebody who's got a list of 7 or 8 renal tracts errm there's a little bit of slack built into it in case things do become more complicated but if they could quite – you know do the renal tract just quickly – they've been approved/ authorized to do a renal tract and then just have somebody sign off they've done it – then that's within their skill – accepted skill range
Interviewer:	So, we are going to have to define skill sets quite closely for that role?
Participant:	But the responsibility is still the same whether they have done a renal tract and abdomen or a carotid Doppler the actual responsibility level is the same so if you are going to have all of that responsibility yourself then you need to be paid for it (laughter) but if you're not taking all of that sole responsibility then that's when you can maybe have a lower band. In my opinion that's how banding works
Interviewer:	Its associated to the role rather than the qualification?
Participant:	Yeah to the responsibility and to the knowledge that ultrasound is very rarely just a focused thing

Interviewer:	So that's going to make it quite difficult to determine this role – is that what you're saying?
Participant:	I'm saying you couldn't have just a band 5 working on their own in like a little department because there's more there's more than a renal tract going in life – so you would have to have somebody around who could either errm dive and help, supervise or do it for them So you would have to have a skill mix as opposed to
Interviewer:	So, if we look at a skill mix then – we've got a 7 and a 5 what would a 6 look like – what would a 6 role be doing?
Participant:	You see that's difficult as well because if I've said it's all about responsibility and the responsibility is the same regardless of the type of scan you're doing – the only way – it is a complicated thing – the only way you could justify whichever one it is would definitely be how many different modalities you were taking responsibility for
Interviewer:	So, it's down to range of skill sets rather than complexity cos complexity is responsibility to some extent isn't it?
Participant:	Yes
Interviewer:	So, if you're only doing renals then you are only responsible for renals and that's a very small range? So, you would expect a 6 to have a wider range than a 5?
Participant	Yes
Interviewer:	And the 7 to have an even wider range?
Participant	Yes, the ultimate sonographer (laughter) yes super sonographer (laughter)
Interviewer:	So, when we look at the 8 cos we do have a few 8's what differentiates them from the 7?
Participant	Well I suppose if it's a natural – if it's a natural progression that way ultimately you'd get to a point where there's nothing left to scan errm you know nothing else to add to your repertoire but if you did have an extensive repertoire then then that should be recognized as well that you're holding that level of responsibility for all of those things – the more intensive the more brain hurty things get (laughter) probably the more you should be rewarded for it, However to errm , anything can be very complex in ultrasound can't it? You don't know until you stick the probe on do you?
Interviewer:	So, we've looked from the 5 to the 8 alongside what is the Agenda for Change framework Do you think clinical competence frameworks help define the role?
Participant	Yes, because I presume clinical competence is you've asked me to list them and I listed what I think so it's literally a list of things that you ought to be able to fulfil for that competence to be accepted
Interviewer:	Ok so the band is very much related to the role and the pay?
Participant	Yes, it's what you do
Interviewer:	What challenges do you perceive for the world of sonography having a complete clinical competence framework/

Participant	Errm a main barrier is in the nature of the job in that you don't quite know what you're going to find or what's going to become relevant when you start a scan – so erm that would be a big barrier and a big barrier as well I would think is like I said I do believe if you have the responsibility to start and go through to a report with recommendations then that requires - if you have all of that responsibility then you should be a band 7 if you don't have all of that responsibility then maybe that's it then but then you end up with errm you might have people knocking around who say well I can't do that one or I've only half done that one – you know and that can cause hurdles in the smooth running and the patient care pathway I think it would have to be very well – you'd have to have a decent skill mix available
Interviewer	Ok are there any other potential barriers that you can see coming from the existing workforce to implementing
Participant	Everybody feels threatened at the thought of being downgraded so if say somebody was newly qualified and they did – they only did renals and abdomens and whatever and they might have only just done one module then errm again it's that tricky issue you think well if they've got full responsibility for that then they should be band 7 but if they are still continuing to be checked then they wouldn't deserve a band 7 to be allocated so it would be like you'd feel like you hadn't pursued sonography to its ultimate reward kind of thing its ultimate conclusion So, perception wise I think for new sonographers it would put them off thinking that they might only get to that point and they might not be able to progress to a band 7
Interviewer	So, you feel that enticing people into the career of ultrasound with an initial start point of 5 might be a barrier as they might see it as a barrier to no progression to anything else?
Participant	They would have to show that the progression was possible within the framework and with time served as suppose and if you showed aptitude and all that kind of thing cos I don't think it should necessarily just be time served as some people are a lot better even though they are very new
Interviewer	Interesting that you say sonographers feel threatened of down grading why do you think that they feel that there's a possibility of down grading
Participant frowning	I think it's a natural part of the human condition is that if they are going to change something it makes you nervous that they are going to change it for the worst – it's a natural pessimism of human nature – you don't see it positively and I don't think there is much you can do about that unless you give people all of the proper information – you know if you said to everybody who is a band 7 now your all safe they would feel a lot better about it
Interviewer	So its about disseminating the rationale behind this rather than
Participant	And it's not saying that you're valuing people will feel that you are valuing ultrasound less because you are giving it a lesser grade and what would have to be pointed out was that when you've achieved all of these levels of competencies you will be a band 7 but at the moment the post you have applied for is a band 5 and this is what is expected of you so I think it is a very clear

	delineation of what your job description what your expectations of you are with the knowledge that you can move forwards
Interviewer	Interesting concept there. The whole – this had become the national agenda now and this is because of the workforce deficit within ultrasound What is your typical workload day list like?
Participant	We cannot survive without the locums now with our staff levels we just can't
Interviewer	How many patients would you be expected to scan in one session?
Participant	Sigh – if you have other duties as well it obviously makes it awkward but just say a bog-standard band 7 sonographer will probably be expected to scan about up to 20 in a day - like a normal 9-5 kind of day Obviously sometime a few less sometimes a few more we don't have set lists here we just have whoever's available and most suitable goes to do and that suits us fine
Interviewer	So, you have an expected time limit for that scan?
Participant	Average time slots are all 20mins with a view with some of them will be quicker and some of them will be longer and it will all balance out in the end
Interviewer	Do you get any breaks in the day?
Participant	We don't have mid-session breaks errm we have a lunch time break and in our department our manager supports that we have a lunch time break together as a social chill out sort of thing errm We don't have set breaks in the morning or the afternoon but we are allowed to have drinks at our work stations and errm its sort of nice comfortable way of working if your need a few moments you take it if you but it's in everybody's interests to keep plodding through
Interviewer	Are there any work pressures within the department of ultrasound?
Participant	Well there's obviously the staff level one that's a big deal – there's the ever increasing referral rate – in the ward ones in particular but also in the GP ones everything is marked urgent so it loses its power to make you – you know you can't treat everything as urgent you just can't physically do it and if it's all marked urgent then we have to vet the accordingly and that can lead to a lot of clashes with clinicians when they've put urgent cos they want to send somebody home say when that isn't urgent like with somebody with acute renal retention you know like that sort – so there's a lot of tussles with clinicians because they're abusing the referral pathways that's a big one Trying to fit something in when your list is already booked up and somethings like carotids as you know you don't have a leg to stand on sometimes you have to do it because of the potential consequences so I think some different modalities especially if there's less people to do them they can be very pressured because you just don't have a choice – you just have to do it regardless Errm there's always – when you've got lots of personalities in a department there's always going to be clashes that way – I think it helps that our department is quite small and it helps and it hinders because everybody becomes aware of everything but it gets out in the open and dealt with sooner so

Interviewer	But generally, the staff morale is?
Participant	I would say it's very up and down – very up and down
Interviewer	What makes it down?
Participant	Errm staff levels – what really really was a big blow was saying we had to work Christmas day – it's a principle – it's a point – it's like the one day of all year – they don't – ultrasound is very rarely an emergency situation and we are supposed to be 7 days working which we accepted on but it wasn't very nice but there's a Rota for weekends which when you only have a small amount of staff it comes around fairly regularly but then for them to insist that Christmas day is covered by a staff member on site that went down like a lead balloon and it's still – it still rankles that was 2 years ago and it still annoys everybody a lot because it felt unnecessary you know - out of how hard everyone works then you don't feel appreciated basically
Interviewer	Has that had a knock-on effect to retention of staff?
Participant	Well it doesn't help does it when you know you're going to have to be rota'd onto bank holidays and weekends then yes it did have an impact on the retention of staff
Interviewer	You mentioned that you use quite a bit of locum staff have you had anybody eave to be a locum sonographer?
Participant	Yes, yes one person has – one of the reasons he cited for leaving as well was that he didn't feel like they were prepared to support him to develop any more than he already was – obviously he'd been doing locum work on weekends and realized how much money he could get also he's got a family so he left basically for the money because he didn't feel fully satisfied here and he knew he could be at satisfied at least financially as a locum
Interviewer	So, looking at all of those aspects why do you think there is a national workforce deficit?
Participant	I think a lot of people don't even know it exists as a job to start with I think errm the knowledge of it as a career is limited to mainly to Radiographers who did a little bit of it in their training so I think it's a really big issue that people don't even know it's a possibility or if they do they only see it as scanning pregnant women – there's a lot of people who – people just don't know about it because after everything I've said I still think it's an absolutely great thing to do wonderfully satisfying keeps your brain going but not that hard – just hard enough (laughter) It's obviously for an NHS job its very well paid even in the NHS

Interviewer	Just as a ball park figure how many part-time staff do you have working in your department?
Participant	Well errm we have several people doing 4 long days and 1 day off – a couple of us do part-time and probably only a few do actual 9-5 Monday to Friday 3 or 4 maybe
Interviewer	So, you have quite a mix
Participant	Yeah which makes the Rota quite complicated on occasions especially when you're trying to get leave
Interviewer	OK that gives me a good idea about the working world errm we've explored the competencies and the bands 5, 6 and 7 and we've looked at some of the issues around implementing them. If the 5 and the 6 isn't the answer to addressing the workforce deficit in your opinion what possibly could be? Apart from promoting the profession
Participant smiling	Yes – we know that they're not going to cough up the money to make people feel justified to not bugger off and do locum work but there is only a certain number of people who would do that any way you don't have to be a particular type of person and family situation to do that so there's a lot of people left sort of champing at the bit to do it sometimes so
Interviewer	So, are you saying that the number that actually leave to be locum is actually not as significant as we are led to believe?
Participant	I don't think it is I think it would only suit a minority of people but I do know that leaves a lot of people discontented and I know that those people would be happier - I really do think it boils down to – to how much you feel you are appreciated you know for your place in the role – we all know how busy ultrasound is so it's very much in demand but its sounds a bit corny saying "we just want to be appreciated" but we do and I think for new sonographers coming providing that a clear career progression could be outlined I think a band 5 /6 is a good idea – It's sort of expanding the student role for a little bit longer you know but I don't think that there are that many alternatives to be honest - We're not gonna give everybody loads more money that's not going to happen – It would be nice if there was more good will for things available errm Like I say I think knowledge of ultrasound as career and how good it is would help as well
Interviewer	Do you think the resistance to the adoption of a 5 /6 sonographer is around valuing the banding? Do you think possibly looking at an undergraduate coming out as a band 6 would make that more acceptable
Participant	They would obviously still – wouldn't have ultimate responsibility so I think maybe there ought to be like a time limit as to how long a hospital could employ somebody as that without letting them progress but then – you get into the iffy but where they say right we'll get rid of you then and we'll get somebody else who's happy to be a band 5 I think there would have to be an agreement sort of on both sides for progression because as has happened here if you have even as stupid as one person doing a

	particular technique if they for some reason leave or go and do something else your screwed – it's in the I've always thought it's in the departments interest to have as many people competent in as many areas as possible because it gives you flexibility but of course we have people come in all the time other people move on so it's always going to be a rolling sort of system A new person will come in and start of at the lowest level and work through and they ought to – it ought to be a kind of work place that would encourage them to stay and want to work their progression	
Interviewer	So, what you are alluding to now is that actually the workplace as in the employers have a big role in securing the future of sonography?	
Participant	Yes, because that secures their own future to provide a service	
Interviewer	What role do you think the HCPC or the society or CASE or BMUS?	
Participant	They don't even recognize ultrasound as a career (laughter) what else can you say about that – that's the ultimate How do people know it's a career when it's not even recognized by the bigwigs? That's' a big negative We have to sign up and say we do radiography but we don't because we do ultrasound – so I think that's partly at the root of it that ultrasound isn't valued as much as it ought to be even	
Interviewer	Do you think that's what makes sonographers so protective?	
Participant	Yeah probably yeah because I think – I don't know anybody or of anybody that's done ultrasound and not liked it that had not found it rewarding – and not wanting to stick with it in some form or another – I don't know anybody that's just not liked it	
Interviewer	So, it's not the job its external factors to the job?	
Participant	No – yes I think that what's going on in the NHS now is very disturbing and depressing and errm that doesn't help either – you know there's – it doesn't all boil down to money but you know that your sort of like it coming from a barren place all of this and no one is being optimistic about it and I find that sad cos I think the NHS is just amazing and people just don't realise it	
Interviewer	So, in your opinion what do you foresee as the future of ultrasound?	
Participant	I would like to foresee it as bright young things coming in starting off, progressing through becoming competent and happy and passing on their knowledge to the bright young things that coming after that I see it as a positive and it makes me mad when other people don't care	

Interviewer	So How do we take the profession forward – what needs to be put in place to be able to change what we've got now?
Participant	Errm that's hard isn't it - I think it would just take to have enough people to have the ideas and to make management people who don't have the foresight or the knowledge to listen and to say you know acknowledge ultrasound as a profession to start with and advertise it and spread the word so that people generally know what a good job it is, how intricate it is – you know how anybody can – people watch you do a scan and think oh that looks easy and they only realize when they try themselves that it really really is not I think recognition is a big thing I think support within departments and from higher up and the knowledge that it is an ongoing thing for everybody
Interviewer	If we promote the profession and look outside of radiography and midwifery to some extent we then have the issue of registration – because of one of the answers could be that we take form a wider pool to train but then we have the issue of not having registered health professionals
Participant	Well then just say you have a register and become a health professional by doing the training
Interviewer	So, then we would still have to take form the nurses, and the midwives and the radiographers?
Participant	I don't know – I think the training could be – there's a lot of intelligent people out there who would have all of the knowledge skills, learning skills to be able to learn to do it errm that was what we were talking about before about wanting to bring people in raw – so there's no reason why they couldn't learn to do ultrasound instead of learning to do x-ray and then ultrasound
Interviewer	Do you see registration as a barrier?
Participant	I don't know maybe they register as a student to start with then when you qualify you're a registered health professional kind of thing I don't know how it really works
Interviewer	Well ultrasound isn't a registered profession?
Participant	But that's the wrong thing it needs to be (laughter)
Interviewer	Cos some hospitals won't employ people that aren't HCPC or NMC registered so if we
Participant	So, they obviously want them to be registered so why can't we just have our own?
Interviewer	Well that's government thing

Participant	It is yeah and I think that's partly what it boils down to (laughter)
Interviewer	So, in conclusion in your opinion you feel that a full framework from 5 to 8 is possible (Yeah) but we need to have a dialogue with the professional bodies for them to value ultrasound as a profession
Participant	If we just withdrew all ultrasound services in the country what would happen to all of the patient pathways
Interviewer	Yeah - if we adopt these frameworks we need to make sure there's the progression is very much outlined, obvious, explicit (to the employer and the employee) and that there's an expectation that they will move through the levels rather than staying (obviously providing they tick the boxes) oh yes there will be some people that want to stay as a 5 (yeah) but if they want to progress there should be an opportunity to do that And if we put all that in place do you think then this would be more acceptable to the ultrasound workforce?
Participant	But I do think as well that people do just think what about thinking of their own finances they would have to be reassured that they would not going to be downgraded in the process and because every sonographer does have that ultimate responsibility at the moment

Appendix 14

Telephone interview sample Transcripts

Participant H – midwife sonographer academic (NI)

Interviewer:	Ok the first part of the interview is about clinical competence and what you understand about the term of clinical competence. Firstly, what I want you to do in your own words is define clinical competence for me
Participant :	I suppose I would see clinical competence as somebody who is safe to practice errm and by that, I mean it's not going to miss pathology or not going to make a misdiagnosis
Interviewer:	So, what key areas of clinical practice do we assess for want of a better word errm that determines someone is clinically competent?
Participant:	Sorry by that do you mean by actually doing the clinical assessment or do you mean
Interviewer:	If you were to look at a practitioner what particular skills would you be looking at to determine whether they are clinically competent or not?
Participant:	I suppose, well obviously when it comes down to it there's a huge amount of things that we are going to look at in relation to clinical assessment but at the end of the day my main priority would be that they have depending on what you know what – all of my experience is in obstetrics and gynaecology so regardless of whether it's an obstetric scan or a gynae scan they'll be able to scan every scanned through the organs, scan every structure they should scan from all planes etc., so obviously obtain all images to a very high quality and will not miss any pathology and make a misdiagnosis that's my main thing because regardless of what else – their communication skills can be fantastic and even their technical skills can be fantastic but if they're going to miss pathology then or miss foetal abnormalities for example or not make an accurate diagnosis in relation to early pregnancy the they are not clinically competent
Interviewer:	So, for you clinical competence it is basically everything hangs on safe practice?
Participant: Higher intonation	Safe practice exactly and obviously what also comes into that as well is safe practice from an infection to a point where you are using the equipment safely
Interviewer:	Ok so what knowledge and skills will a practitioner need to ensure this safe practice?
Participant:	Well I suppose they are certainly going to need errm a good understanding of the anatomy and physiology in relation to the modality that they're scanning in and that they know what they are looking for and they are also going to be able to a history from a patient errm and be able to you know have all the correct information before scanning in relation to the obstetric history and also the current signs symptoms etc., what the scan is actually for so before they ever start scanning they have all the information they need for doing it and the obviously be able to operate their equipment correctly in order to obtain the best images err

	and also have a good knowledge of the guidelines so know what the scan should be for example the anomaly scan – know exactly what structures they're supposed to be looking at – they need that check list in their mind so they don't miss anything so they know before they do the scan what they need to be looking for and image it to the best of their ability
Interviewer:	So apart from then the sort of knowledge around errm anatomy, physiology and errm examination justification especially within obstetrics which you said is your area of expertise errm would there be a requirement for equipment manipulation and errr?
Participant: Emphasis on absolutley	Oh, absolutely I mean of course it has to be able to – they need to know how to optimize the images – so they need to know how to use the equipment and to optimize the images – how to change settings to get the best images that they can get
Interviewer:	So, they're a very broad set of skills and competencies that we've looked at – if we now start to drill down between the clinical competencies in different bandings and I'm not quite sure how errm the bandings work within your area in Ireland errm but here we have the Agenda for Change. Do you have the Agenda for Change?
Participant:	No
Interviewer:	No – so what levels are your sonographers working at?
Participant:	(Long pause) OK well and again I probably really talking about midwife sonographers than radiography sonographers because the majority of our sonographers that do obstetric scanning are midwives but having said that its radiographers rather than midwives that do the gynae scanning but in both cases really you have errm You have a sonographer who is basically starting off who's just working in the department ideally supervised now that's errm that depends on where they are working the amount of supervision they get initially before they are let off on their own so, you have somebody who is basically should be working under supervision errm and then you have errm and they are paid as a errrm from a midwives point of view you know they are paid as a staff midwife and from a radiographers point they are as a basic radiographer and then the next level up is the clinical specialist but both your radiographers and midwives can be clinical specialists potentially and then obviously management as well the clinical specialist errm would have to have the qualification – in the past it would have been the Higher Diploma in ultrasound but now it's the MSc
Interviewer:	So, your sonographers errm come from a midwife or radiography background so they have a first degree either midwifery or radiography?
Participant:	Yes exactly, exactly
Interviewer:	And then they start onto the ultrasound which is an MSc programme?
Participant:	It isn't accurate no at the moment it's an MSc it used to be the Higher Diploma but we no longer run the Higher Diploma it's an MSc but

Interviewer:	So, your sonographers that are being supervised presumably have the Postgraduate Certificate level
Participant:	No you see again the Postgraduate Certificate is something we didn't use it's a graduate Certificate now we only have it for Obstetrics ultrasound we don't have it for anything else and that's something we introduced about errm about 5 years now and that's a completely separate programme – That's a programme taken by could be midwives could be radiographers could be obstetricians as well errm and it is a more basic, much more basic programme but it's an arduous thing for those scanning in the antenatal and they that's what I think and you know it is, tends to be a very basic qualification – anybody that is actually going to be errm specialize in ultrasound takes the MSc so most of them that takes the – well we have has some that have done the basic graduate certificate who then decided they want to specialize further then go onto to do the MSc but it's not a requirement to do the MSc Most of our staff will either have the basic radiography training, most of our students who study the MSc will either be midwife or radiographer and then decide they want to work in foetal assessment or in the general ultrasound departments and they work you know they have to be there for so many months before they can start the MSc programme
Interviewer:	So of all sonographer practitioners have an MSc – a full MSc?
Participant:	Err again
Interviewer:	Apart from the graduate ones
Participant:	It's the ideal – its certainly becoming more the practice but we have students taking their, just taking their – we started their programme in September and we did have 20 more or less students we have errm and only 8 of them are doing just obs and gynae the rest are doing general ultrasound and of which there will be errm the'll be at least 4 who have been scanning for quite a number of years
Interviewer:	So if they don't do the full MSc what do they step off the programme with what award?
Participant:	We don't have- we don't have errm they don't basically they are more or less the same as the other thing – as I say we have the graduate certificate which is a completely separate programme and with the MSc its either all or nothing That's where we're different errm you have a Dip is it a Postgraduate Diploma?
Interviewer:	Yes, we do a first year of which they can do anything basically which they come away with a PG Cert and then if they continue on to the 2nd year they do PG Dip but we have very few who continue on to the MSc because it's not a requirement for practice
Participant:	Yep Yep
Interviewer:	So that's how we differ there -
Participant:	And it's not such a requirement for practice her either you see its very loose to be honest in saying that though if someone its going for clinical

	specialist post it probably will be in their – it certainly will be in the job description for that path the qualification
Interviewer:	Ok so for your clinical specialist errm practitioner which I think probably equates over to our band 7 sonographer which is a person that can do at least 3 areas of ultrasound usually abdominal, well general, obstetrics and gynae is usually the 3 areas that they do – so I'm presuming that's kind of similar to our band 7
Participant:	It would be but obviously the midwife sonographers will only be doing obstetrics and gynae because that's what they are qualified in and we don't you see our maternity are quite separate to our general hospitals so our most depending the larger hospitals the radiographers wouldn't have a need to do obstetrics cos they wouldn't be doing it but they would have general and gynae and vascular and stuff like that so it would be separate
Interviewer:	Ok so your clinical specialist practitioners what key competencies do they have that set them into that role?
Participant	(Pause) Errm I suppose the difference is that – well first of all they have they have qualified to the MSc level or they say Higher Diploma level because somebody who has the Higher Diploma because that was the older one's qualification up to 2007 is errm it is kind of considered now until the MSc is – if you want to have a chance at getting a clinical specialist role at this stage The fact that they have the higher level of qualification and that they, they have the errrm it comes down to the years of experience but again that differs from hospital to hospital We have students who have just finished and they are getting the clinical specialist posts as soon as they've finished and they may have only worked in the ultrasound department a couple of months before starting the programme – so it's not necessarily about the length of time of scanning what they what their requirements for a clinical specialist, what goes onto the hob description is somebody that can write guidelines, who can audit practice errm you know who can keep evidence based practice , research based practice on board on the unit and err
Interviewer:	So, the clinical skills from the errm graduate certificate person to your normal practitioner to your clinical specialist practitioner what is the difference in their clinical role?
Participant	The clinical role is again it depends very much on where they are working In some hospitals, they may take on a case load errm but do you need what they are expected to do within the department or clinic?
Interviewer:	Well yeah – is there any difference in their role for instance if we look at band 5 sonographers what they are saying is they wouldn't be able to report because band 7 has been created on the ability to make a report a diagnosis so is there is any difference like that between the 2 roles or is there a range that they have?
Participant Quizzical tone	You see again things are quite different so with relation to radiographers scanning in the general department there is no official reporting at all here at the moment there is a lot of work to be done on that

	Certainly, in some hospitals they do the preliminary report and the radiologists don't just accept it and at the moment regardless of what qualification they have or how well qualified they are the radiologists signs off on all of the reports In some hospitals where they are better structured at least they do the preliminary report there's certainly is a move towards them all reporting but we are certainly not there just yet In relation to obstetrics its totally different errm all the obstetric sonographers report their scans and always have done regardless of their qualification or not
Interviewer:	Why do you think there's a difference between the autonomy of reporting between obstetrics and general medical?
Participant	Honestly (laughter) they won't hand it over and the obstetricians will and that's my honest answer and that's what everyone will accept as reality – now I suppose but you also have to understand a lot of the obstetricians here wouldn't err they've had very basic scanning qualifications and very basic scanning skills and so they say well you're obviously better than me so you obviously report but even in our larger hospitals where we have large foetal medicine units with consultants that are obviously highly qualified in foetal medicine ultrasound they absolutely 100% support the sonographer scanning reporting whether they are a radiographer or a midwife if you are able to do the scan you report on it end of basically And the staff are all covered under the hospitals indemnity to do that and so errm what the general feeling is amongst people scanning is the kind of old issue is that its radiologists that want to hold on to the preliminary
Interviewer:	Ok so kind of like a power
Participant	Yes, a power thing cos the younger radiologists are very happy to hand it over – the younger radiologists, the younger and also the fact that they've probably come back from working elsewhere you know recently enough and that they've done it like that and got used to the person doing the scan passes on a report to the clinician so they feel that the person doing the scan should report. Very much political I would argue
Interviewer:	So that's something similar to what we went through about 10 years ago
Participant	Yeah – I also have to say that there would be you know a small % but again this would be very commonly accepted is that there will also be a small % of radiographers that don't want to report either – they don't want to take on that responsibility
Interviewer	Why do you think that is?
Participant	It's just that they don't want that responsibility really and I don't think they feel h they get more ermm cover errm we've talked about cover for more experience in it and some just don't want to take is on at all because it's just the nature, the nature I suppose errm not wanting the extra

	responsibility but that would be a small % and again that would tend to be older and longer number of qualified
Interviewer	So, it's kind of like a professional errm issue about development and seeing where the role can go, as well a political power struggle?
Participant	Yes
Interviewer	So, in actual fact the roles don't differ as in clinical roles between your 2 levels its actually the addition of the kind of I would say the management things like audit and guidelines and stuff
Participant	Exactly
Interviewer	That gives you the clinical specialist role
Participant	Yes, and then in some of the hospitals and some of the larger departments here for examp0le we have 5 stand-alone maternity units for example so the one I have done some work in well they would have delivered 10,000 babies they have 6 clinical specialists so and that's in a unit like that that they will sort of one will look after all of the multiple pregnancies and one will look after they kind of take on workloads you know more specific workloads
Interviewer	So, at the moment then your framework within in ultrasound is a – I don't even know what level to put them under because they are a radiographer with an ultrasound specialty and then you've got the clinical specialist so you've only got 2 tiers to your profession
Participant	Yeah exactly yeah – like again as I say it depends on the hospital but it's like everywhere the larger university teaching hospitals you know everybody has a qualification and the people we tend to find that are coming along and asking things are getting less and less but the people that are coming have often worked for 10 years in ultrasound or 15 years in ultrasound tend to be in the smaller non-teaching hospitals not university based hospitals but because that's changing certainly and they're changing also because what they see is the people coming along with the qualification are getting to be more senior in the department maybe the manager or whatever so they see that they have to get their act together and get their formal qualification
Interviewer	In Ireland is there a workforce deficit within ultrasound? Have you a problem recruiting to ultrasound?
Participant	Yes, but not so much in the obstetrics side I have to say but in the more general side yes there is Again. it's interesting for obvious reasons I suppose it's actually getting better but errm the main reason was you know the CT and MR radiographers paid better and the on-call pay is much better where it's not for ultrasound But it's actually been reduced what people get for their on-call for the various different modalities so now anyway so now recruitment we're finding that actually easier but what we do find is probably within - one of the problems again in the last few years there has been an embargo on

	clinical specialists posts – so you do your masters and you kind of sit there – for example as a midwife you're on a staff midwife salary etc etc but that has actually in the last few months has changed and now in the last few months there's been a rate of clinical specialist post have been sanctioned so I hope that would change if that was the main reason for the people to set up and say why would I go in and take on all this extra responsibility and do this extra course etc, etc, and get nothing you know the obvious things I suppose errm But it seems to be getting better now in the last few months we certainly have no problem with numbers for our course but we also do find there is a little bit of a errm you know people will go off and work in the private sector as well – the pay's better -
Interviewer	Well that's the difference with your system that you do have the private health care as well as the NHS care – so there's a difference between pay between the two systems
Participant	Yes, exactly between pay but I mean also the level of responsibility is the same at any basic scan after that it changes and if there's a problem you just book them into the hospital but yes pay is better yes
Interviewer	So, there's no remuneration for doing the ultrasound extra education
Participant	No there isn't it just means you're more employable or more likely to get a clinical specialist post and that's where that comes in but in its self no definitely not.
Interviewer	OK so in a way would you see that as one of the key factors for causing deficit or most likely a lack of workforce
Participant	I would think it is probably errm with the radiographers particularly because again with on-call etc., they're not getting their – they wouldn't find it as easy No with the midwives it's not as much of a problem because a lot of midwives will go into the area because where they are currently working is not you know be that antenatal, post-natal delivery ward so a lot of them would see it as a big draw to have regular hours
Interviewer	You're a midwife sonographer?
Participant	I'm a midwife sonographer my background is foetal medicine. That's one of the big draws you know whereas with radiographers it wouldn't be so much because they tend to work regular hours all be it the on-call on top of that as well errrm so I suppose errm yeah that's kind of definitely errm the heart of it the regular hours and again, for a lot of the midwives there will be a drop in salary because there used to getting the shift work – and they actually don't mind the drop in salary to get something more regular errm and then knowing then in relation to taking on the further education some have had to pay for everything – pay for all it involves study leave and pay fully for the course and some others don't and that obviously effects the intake as well

Interviewer	So, if it was more like a commissioned course errm where the fees were paid even thought that is being removed in the UK as well perhaps the uptake would be better?
Participant	Oh absolutely, absolutely
Interviewer	Going back to the working environment and sort of like the structures for coming out of radiography into ultrasound – Do you have a framework whereby you've got your radiographer err – that person is a practitioner and then you get a clinical specialist – is that for radiography, midwifery and every – does that go across all of the health professions that kind of framework?
Participant	It does yeah – that's been in place now for a number of years - yes
Interviewer	So, you have one framework that fits all professions?
Participant	It does errm – yeah I mean obviously – well it's a different framework but it runs on the same basis if you like – yep – so like within radiography you have basic grade radiographer, then the senior grade radiographer and then your clinical specialist then a radiography manager and then in midwifery you tend to have a staff midwife who it's just the one grade but its one position you don't have junior and senior as like the basic and senior but you do have in the sense that there's increments you know someone working for a number of years will go on a higher increment but its staff midwife as the standard position, then clinical specialists and then you also have manager as well The same really yeah
Interviewer	Do, then each profession have their own errm job specification you don't have a generic job specification?
Participant	We don't but for example the hospital where I worked at for example when we were getting a clinical specialist radiographer sonographer position – they didn't – the job description was practically the same you know – just changed where it need to be you know – but not the much different errrm the job description
Interviewer	Do you think the clinical competence frameworks the structure that you've got actually helps you define the clinical role for each level?
Participant	Not enough at the moment but there is a lot of work being done on it both in midwifery and radiography so I think they'll be going through the roles but there's been nothing done for a while but certainly errm it's getting better – yeah – I think yes – it's you know if someone's going for a clinical specialist 's post in either area I think they should essentially should be responsibility the whole sentiment part of that from the staff midwife and what and and (repeated for emphasis) radiographer as well

	But what you tend to find in probably in the more smaller hospitals but even in the larger hospitals too when I got my clinical specialist post – I was the first one to get one in ultrasound as a midwife and in particular in the case to go on to differentiate between a clinical specialist and a manager – yeah – that – smaller hospitals now for example we have one unit where we errm there was 2 midwives working – this was on a unit that was very very badly organized and they finally got their act together and they had 2 midwives – one who had finished the Masters in 2014 and one to finish in 2015 - they errm the tend to give the clinical specialist post – the one who finished in 2014 got the clinical specialist post and the one in 2015 has been told that once all her grades are through she will also get one. They don't have a manager in that department – so basically, they do everything. So, the role is about the size of the hospital and there's a lot of blurring about that and again I know it's the same in the general hospitals and again the size of that hospital not so much that the managers are asked to take on the role of the clinical specialist it's the clinical specialist that has to take on more management then they should be – you know – they do the Rota's and things like that it's not actually their own – so that's a problem
Interviewer	Do you think the differences across hospitals with their expectations for these different levels creates any issues?
Participant	Err do you mean hospital management expectations?
Interviewer	More if I was looking for a clinical specialist role in one hospital and another clinical specialist role at another hospital and the differences between the 2 expectations of what they would expect me to undertake
Participant	Yes, but I'm not sure what you are asking me
Interviewer	Well I might have got it wrong but there doesn't seem to be agreement on what a clinical specialist does
Participant	There isn't and there should be – it is quite clear in the general guidelines but it's mainly the smaller hospitals that they want the person to do everything Whereas in the larger hospitals where there is more staff I suppose there's the better delineation between them – somebody's actually the manager from the administrative point of view to somebody's who is clinical specialist role – yeah
Interviewer	You said earlier there is a process of change of the frameworks that you've got and there's been some work being done to it – How has this change been received by the practitioners?
Participant	(emphasis and higher intonation) OOOO from the practitioners point of view very well but this is what people want – they want a system in place whereby once you're working in an area – once you have a certain level of expertise, qualifications once you've taken on the role and they want a bit of differentiation obviously of what the role is in regards to the clinical role and what the practitioners is very very well - like I say the only – the only caveat to that will be in relation to reporting there is still a certain

	percentage who doesn't want to take on the role of reporting but errm but that's tough that's what the practitioners would like see and on the balance of it as people get older they'll retire and to be honest that's what you see Generally speaking it is the older, the older ones
Interviewer	Well presumably those that don't want to take on that responsibility will be kept at the same level they are at now and will not progress to any higher level?
Participant	Yeah I would imagine so and errm or but they've been in ultrasound for years so they're not going to leave it but for example where I know there has been an issue in again in the some of the smaller hospitals now the radiologists handed over all of the obstetric reporting and responsibility for obstetric ultrasound to the obstetricians and in some hospitals it's all radiographer sonographers but they have the qualification for the Higher Diploma and it's a long time since they've done that qualification and also it's a long time – they've never reported errm and now because the obstetricians are saying they should report that's what happens and so some of them are embracing this and have organized study days and different things to really bring up their skills and a way was suggested ok why don't you report on so many and get them signed off – just the usual way of doing this - whereas some of them say they aren't doing any more obstetrics because the feel they'll have to report at the general ultrasound side of things –so they're not leaving ultrasound but they are not doing the bit where they have to report
Interviewer	So, one of the key things I'm picking up from you is then that the sonographers are embracing this new framework implementation because they see it as a development opportunity
Participant	Yes
Interviewer	Obviously, more structure to their career
Participant	Yes - absolutely
Interviewer	So, it's quite converse to what we are going through here in that for us there appears to be some barriers because the change means – it's quite threatening to them because they've already got these but your sonographers see it as an opportunity for remuneration for doing the extra study
Participant	Yes exactly yeah yeah (excited tone)
Interviewer	Do you know if sonographers have been involved in the development of the framework?
Participant	Errrm not certainly to the level they should be - possibly better with the radiography because its smaller – radiography in itself is smaller errm it's a smaller specialty – smaller numbers errr but within midwifery but like for midwife sonographers it's not like – there isn't anybody representing midwife sonographers so it's just midwifery and then the specialist roles like the many specialist roles within midwifery itself so it's just one of the many but again the numbers are increasing and that's planning to change

	The other thing that possibly has made a major difference shortly believe it or not is we although it has got much better we still don't have a definitive errm standard here that all women receive an anomaly scan – err now it's got much much (repeated emphasis) better but again what you find is the larger hospitals have this in place now whereas the smaller hospitals don't errm now	
	I've seen a draft of the maternity errm strategy coming out in a few months but in that draft is a statement that every women in every hospital etc etc everybody will be offered a routine anomaly scan and that's obviously going to mean then that there's going to have to be the right number of people that is qualified and a proper standard put in place and that's going to make a difference as well and it's going to errm mean that there's going to be more input from sonographers, midwife sonographers as to what the role should be – to mean	
	Whereas as I see the Irish Nursing and Midwifery Board they are the ones who wouldn't – the clinical specialist post is a very general – generic clinical specialist post and then depending on whether its midwifery neonatal or whatever they decide ok well in relation to this particular role but generally you know – I suppose where it is they have input is within the individual hospitals but when the job description's being written they obviously talk to the midwifery managers and you know decide what needs to go into it but they wouldn't be as much input as there should have been from the sonographers	
Interviewer	Do you think that this creates a lack of inclusion - I don't know do you think this creates some anxiety towards the changes?	
Participant	I don't think so – I think, well, probably – I think the main negative about it is really is just going back to what I was saying earlier – is the depth of understanding as what the differences in the roles are in that the management role that's mainly it but no I don't think so	
	I haven't been aware of that – anyway so	
Interviewer	For you in your situation how do you perceive the future of sonography?	
Participant Quite light tone	I think it's only getting better – it's getting better all the time – we have errm just to give you an example we run a study day back in November – BMUS ran it first – first time BMUS have ran anything in Ireland and they – it was on a Saturday which obviously helped - we had 200 attend and 50 on the waiting list and already everybody asking when the next one is going to be	
	So I think the – and we've done a few – that's the first one that BMUS ran but we've done 2 already in the last 3 - we've tried to get everyone together – we've tried to pick a generic topic and then we can get everybody and it's been very successful and I think – it seems to have taken off in the last 2 or 3 years – more of a feeling of a community of sonographers and everybody kind of wanting to do as much as possible to improve – improve everything and that's - going back one of the study days errm earlier on – we had one in February and there was a good bit of stuff in relation to reporting errm because we are trying to make sure as	

	much as possible that we can get the midwives and the radiographers sonographers together at the moment as one group rather than trying to differentiate or trying to pick topics that everybody will be interested in And we broke off for smaller sessions in the afternoon then that was related to your modality but then again you know we had very good medical related people talking and a couple of radiologists talking all supportive of reporting Generally speaking the feeling is that everyone wants to embrace everyone wants to improve you know improve the role and make it more independent and so I would say yes there is a great feeling our there I just think it's really important for the role is we can all get together and make it better So it's very positive
Interviewer	So, it almost seems like you're a different spectrum to how far at the moment in so much that your sonographers feel these changes are empowering and ours aren't
Participant	No, I hate to say this but maybe we are a few years behind in the sense that is probably the way it was 10-15 years ago and maybe things have happened to take that way from people to make people feel frustrated and fed-up and I'm not saying that's not going to happen here as well – you know – but we'll just have to wait and see I suppose
Interviewer	How could you avoid it if you are sort of like on the same cycle as us just a little bit further behind – what do you think could avoid the situation of where we are now?
Participant	Errm well one of the things is – well I something that really answers the question – errm unfortunately we have to be realistic of where the power lies and unfortunately one of the main things there is regardless of how people themselves – sonographers themselves – how they much they want to – unless they have support from more senior management and within the general hospitals that generally speaking is the radiologists
Interviewer	So it's the medics that have the power
Participant	Yes very much so because again if I just go back to that hospital now where I'm saying wanting a clinical specialist post straight away and another one coming shortly – errm but errm what happened there was a new consultant started working at the hospital and who drove it and that's what we see and its now again if National guidelines standards come in again it will drive things because they won't have no choice but errm you hate admitting that but really it is – yes it is medical errm backing is extremely important and the just reality of it
Interviewer	So really the security of the future of ultrasound or where it goes is very much at the hands of the medical profession

Participant	I would think so – I would think so -I would love to say that isn't the case but I do actually feel that it's very much the case yes - and that said its right across the board that's radiologists and obstetricians that's right across the board it isn't only where they - you know - its I suppose its power and control and they just I don't know is it that they are more powerful here in Ireland than in the UK but our medical profession here is very very (repeated for emphasis) powerful
Interviewer	Thank you that concludes my interview

Interview Transcript
Participant J

I: You've had the information letter that provides you with an overview of what the study is about :

P: Yes

I: Can you just briefly give me some background about your professional qualifications and experience that you have?

P: yes I trained in the US and I got my undergraduate BSc in Diagnostic Medical Sonography - we trained to do general, obstetric, small parts vascular and so from there I went to work in a hospital and did that for a year and then went into a private Doctor's office and worked there for 5 years and at that point I needed a change and I found out there was a shortage of sonographers here in the UK so I came over to the UK - so here I locum'd for a year and for the past 2 years I've been permanently employed at ----- London as a sonographer - while I've been here I've done my MSc in Medical sonography specialising in MSK imaging and at the moment I'm just doing general and MSK imaging and some baby hips and a little bit of obstetrics.

I: Ok that's great errm building on from that can you define what you mean by clinical competence - if you was to use the term clinical competence what that actually means to you?

P: as a sonographer

I: yes

P: Long pause well it depends if you mean the US or the UK cos that would make it slightly different cos in the UK we report our own stuff and in the US you don't so there is a slightly different level of competence I would say.

I: ok so if we are looking at competence from the UK perspective

P: yeah, yeah I would clinical competence would be the ability to recognise abnormal from normal and to - if you can't say exactly what the diagnosis is -sometimes you can't just based on one ultrasound to have the medical knowledge which pathway to send the patient down to get the diagnosis

I: ok errm that differs from the US mainly around reporting?

P: yes because - like here if I'm doing here a RUQ ultrasound and I see gallstones I write in my report gallstones seen within the lumen of the gallbladder - in the US I would a preliminary report but I am not allowed to diagnose but I would write mobile echogenic foci seen within the gallbladder so you're still recognising the pathology that is there but you are only describing it you're not putting a name to it.

I: Do you think that is reflected in the fact that it's a BSc as in a first degree in the US and a MSc in the UK?
P: (clipped) No

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I: You don't?

P: (irritated tone) No actually my BSc degree in the US was much more comprehensive than the degree here.

I: OK so looking at clinical competence are there any key areas in clinical practice that can be used to determine competence?

P: I'm sorry you're going to have to repeat that?

I: are there key areas of clinical practice that can be used to determine clinical competence?

P: oh ok - certainly you need to know how to manipulate the machine to get the correct imaging but I would say the biggest thing would be just to match the images and the report to make sure that there's a correlation there and that there's not something you can see on an image that suddenly doesn't get a comment on the report

I: ok so when we talk about clinical competence what we are actually looking at are a set of skills that make us competent - what would those skills be?

P: I mean you just have to be able to perform the exam to know where the anatomy is to be able to take the appropriate images of the anatomy and then to know what they mean

I: are there any generic skills that all health care professionals have?

P: errm I mean you have to be able to manage your time, time management is huge because the lists are very tightly packed and most hospitals I'm sure like we get 15mins per patient so you definitely have to manage your time. Errm also you have to have good communication skills and writing skills cos your gonna be writing up reports, communicating your findings to other members of the team like if you find you know an unusual finding that you're not expecting to see and you have to call the Doctor or the specialist in the hospital to get them to follow it up

I: So When you are saying that it's really the key clinical competencies for a band 7 being reporting and diagnosing

P: (sigh) you see I actually disagree with that errm I think that sonographers should be a band 8 because we do report I think we do more than like an MRI radiographer who just performs an exam but doesn't actually report the study. There are a lot of hospitals in London and across the UK now that are banding their sonographers at an 8 and I think that's appropriate for sonographers

I: do you think these discrepancies in the banding causes problems?

P: I think they can do yes (emphasis on yes) because I think errm you do sometimes loose members of staff to go do other things when they can get paid a little bit more or go to another hospital that is going to band them a bit higher I couldn't really understand from your study what a band 5 could do as a sonographer it's so independent it's not like you can just

put the patient on the table and line everything up and hit a button and the machine does it for you I mean you have to manipulate everything -

I: so, you don't feel that there is a role for a band 5 sonographer?

P: I do not no – (very decisive)

I: Ok so there would be no clinical competencies that you could look at that would be associated with this role?

P: No (quick response followed by a sigh)
I mean the only way I could think to limit it would be you know your lower band maybe would only do one specific type of ultrasound like if you only do kidneys you know kidneys and abdomens and then if you do others studies you know you are banded higher and maybe just the general sonographer , obstetric sonographer band 7 is ok but certainly if you are doing things that require extra education like MSK imaging or if you are doing fine needle aspirations or steroid injections things that some hospitals will allow you to do - I think you should be banded at an 8 personally

I: because that's advanced practice presumably?

P : its advanced practice yes – it's above the role and I don't think in sonography the roles are clearly defined so it might be interesting to do this and clearly specify what makes a band 7 different from a band 6 because right now there isn't really they just band every sonographer as a band 7 in most you now in a lot of places and I don't really think that that is appropriate. (lower tone and slower speed)

I: this has come from agenda for change which is a competence framework which to be far sonographers aren't a profession they've come from other professions and so mapped across from where they were on the agenda for change as say a nurse, midwife or a radiographer errm - Do you think competence frameworks help define the clinical role?

P: Errm it could if you know if its used correctly but it all depends on who is planning the framework and as who has control over it errm which needs to be an ultrasound body that has control of it and I that the - there's not a whole lot here and maybe a lot of that stems from the fact that every sonographer was something else first errmm rather than in America where you can go directly into the field of sonography so there's a big - we've got a massive society and as an institution if they're really work on the behalf of the sonographers - we are here and also there's a shortage so obviously the numbers are low so you don't have as many people to try and push those things through but even in the US with as large as a Society we have we still struggle to get any government recognition and to get certain things passed through like for instance we have to sit board exams in order to be certified as a sonographer like after we've completed all of our education we have to take a physics board and we have to take boards in each specialty that we want to practice but the government hasn't quite caught up where that they require all sonographers to be board certified in order to practice.   Its strongly recommended the Society really pushes for it but the government legislation isn't there to back it up yet so I mean we're in the same situation back home too. Ultrasound seems to slide into this little grey area.

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I: I guess in a different way because our professions are registered errm but Ultrasound isn't but you are registered through your original profession so either in NMC for midwives or HCPC for radiographers erm but by bringing in lower bands errm and making it a framework in its own we are stepping away from the registration rather than towards it - which in the US you want to move towards it and we are moving slightly away from it which is quite a different tack in it really isn't it?

P: Yeah I think - yeah - but it is an interesting thing because in the scheme of things it's not an old profession it's only been around for like 35 years or so errm all of the people at the top didn't have any formal education did they really - I mean people didn't factor things for 30 years they all just concentrated then and learned about it as the thing was forming but I think that's kind of another reason why it's not as structured as some of the other professions but it has been a struggle for me because I can't get HCPC registered because sonographer is not a recognised role yeah - so because there's a shortage they do accept my American credentials at most facilities but like some hospitals would not employ me because I'm not HCPC registered.

I: yeah - it's becoming less so - there's ways round it - but it's still a barrier to some extent, isn't it?

P: yes it is - I do worry about that because there's what 3 different programmes that are starting undergraduate degrees for sonographers this year and will there students be able to work when they come out - that's the question?

I: it is a big question - I mean its around employability registration eerrm and it's something we need to be very mindful of I think -

P: I would say another thing as far as the clinical competencies go is the number of hours that you require students of a sonographer to have done during their training because like the school and this is what I mean when I'm saying my programme in the US was actually more comprehensive than my programme here like my programme here I just had to keep a log book of patients - it was like 50 cases or something per joint or whatever but the programme I did in the US I graduated with over a 1000 clinical hours of scanning experience so we've been in the hospital for 2 1/2 years at least 2 of those years for 3 days a week we were in the hospital scanning patients of course people were scanning after us and checking our work and we were gradually doing more and more and so and less and less with help but we do come out really clinically competent and ready to work because we had all of that experience under our belt where I think a lot of the programmes here are looking at doing all of the didactic like for a year and then do one year in the hospital and I think I do worry about that because we did it all together we were able to just build on the skills that we had rather than trying to dump it all at once

I: yeah I think within the Masters programme err they expect you to come in with your generic health skills anyway so that

P: laughter - yeah - no that's definitely true and I know that you know 95% of people on the programme are working full-time as well so I couldn't have done a programme that required what I did when I was at school because it was a full-time programme and this was you know obviously part-time where you could work

I: yeah - that was quite interesting to look at the different ways of how the frameworks are built - you mentioned employability and registration being barriers certainly from your point of view with the HCPC errm what other potential barriers would you perceive having worked with the UK sonographers against bringing in 5 and 6 practitioners?

P: I think it's mainly where is the line going to be drawn - in what is the difference to being a band 5 to a band 6 to a band 7? I mean have you looked at that? Have you - have they decided what they want a band 5 sonographer to do? (raised questioning tone)

I: Well that was supposed to be the purpose of this study, however no one is prepared to out their head on the chopping block and tell me or unpick a 7 for what a 5 could do from a 7's role.

P: right I think because I think a 7 is about reporting because you're a reporting radiographer you can't be a band 5 and report a study - so you would have to do study's and have someone else you know checking your work and someone else reporting it and that's the problem here because everyone reports of the live imaging which is I think is much better than in the US its much harder to report a study from someone else's images because things do look different in real time than they do in a still picture - so errm I like the fact that here you know sonographers report their own studies rather than taking a series of pictures and sending them off to a radiologist to report - I think it's better - I think it's better for the patient honestly because I think you do get more information in the real time imaging than you do in a series of pictures - so for a band 5 I just don't know - I don't know what they will be able to do if they can't report - because I don't think you can report and be a band 5 -

I: one of the main guidance for looking at errm direct entry undergraduate education for sonography was to address the workforce deficit - if the 5 and 6 is not the answer to this deficit in your opinion what could be?

P: errm I don't know it might just be a matter of doing a push for like errm work experience for teenagers coming up into University age trying to find out what they are wanting to do and letting them know that this is a job that is out there because I think there's a lot of people that just don't know about it - errm I kind of just fell into from my Aunt's friend who did it and you know she was saying this is a good up and coming field that I hadn't even considered it I mean I was looking at medicine and physical therapy and law school and all kinds of other things - I don't think a lot of people know also that there is such a deficit - you are guaranteed employment which is a good thing with the economy the way it is that you know that you're working in a field where you can find work.

I: yeah in the UK we don't quite have - because the midwives are quite aware of ultrasound in their training and the radiographers are quite aware of ultrasound as a career opportunity for them in their training so ?

P: but that's when they are already there

I: well yeah because we don't have an undergraduate programme.

P: right -yeah - but I think an undergraduate programme is the answer because honestly, I mean and I am biased because I didn't come from a radiography background I don't think that makes me less of a sonographer than my colleagues who did train as a radiographer first cos

outside of knowing anatomy and those things what do they really what does knowing an x-ray really help you with an ultrasound? It doesn't. So as long as the undergraduate programme contains enough of the core medical knowledge - anatomy and pathology and all those things that you need I don't think you need to do that first. I really don't - I think an undergraduate programme is the answer and I think - I don't think there should be a difference in the banding of someone coming from an undergraduate programme and someone doing a postgraduate or possibly the other option making it either a band 6 with the undergraduate and then they can do you know a postgrad certificate and have their band 7 or something I don't know you'd want to work that out - but I do think that an undergraduate programme will help with the shortage.

I: so, correct me I'm wrong with my understanding you think the undergraduate is ok but band them at a 6 when they qualify rather than a 5 because that would be more appropriate?

P: I would band them as a 7 if they have a comprehensive programme and they come out as clinically competent sonographer (raised tone and quick response) but if - I'm saying if people are worried that they aren't gonna be clinically competent with an undergraduate degree then maybe coming out school you could band them as a 6 until they met whatever criteria you wanted them to meet to become a 7 - but I don't think there's any role for a 5

I : right ok that's great - In the areas that you worked at in the department was there a workforce deficit there - was there a high vacancy rate?

P: well the place I work currently - I worked there as a Locum for nearly a year before I took on permanent employment there - we're also training up 2 students as well - but so at the moment we're almost nearly fully staffed. But there was certainly a deficit when I came on board.

I: ok and do they use locums now or not?

P: we don't have any locums there now currently - no - errm we are in a position where errm because of it being a teaching and training hospital errm we have a lot of registrars and some of the registrars cover our lists so errm they don't have to go with locums

I: errm so why did you change from locum to errm to fully employed because that's lesser pay isn't it?

P: because I didn't have a choice (laughter) errm when I was here I was here for 6 months when my company that sponsored me - because I was sponsored by a third party employer to come over and work locum they lost their right to sponsor health care workers because you know I get the UK AVA's point they were saying you know they weren't actually employing us you're actually being employed by NHS jobs and private health systems so I errm that at that point I had to get a new sponsor if I wanted to stay in the country so that's when I went on permanent employment at the hospital -

I: Do you think our workforce deficit has errm the locum and the AQP situation has exasperated our workforce deficit within the NHS

P: ok repeat that one too I'm sorry

I: Do you think that the locum agencies and the private suppliers of sonographers with their higher rates of pay and such like has caused a bit of a deficit within the NHS?

P: Honestly I don't because the majority of the locum workers I've met are not from the UK - most of the locum workers are people who have come over from errm - well there's a few Americans but its mostly Australian's and a couple of Canadian's and I know when I lost my Visa and had to take on permanent work quite a few of my friends who are Australian and working as locum went back to Australia - so I think if the Government goes through with this capping of locum pay the UK is going to lose a bunch of locum sonographers - they get paid really and they'll go back to Australia and then I think it's going to get a lot worse-

I: so that the workforce deficit is being caused by people migrating across to private agency work is actually unfounded?

P: in my experience but I only know my own experience I haven't been around that many hospitals or that many locations I've mostly been in London as well

I: Just so I can get a feel for the working environment for sonographers a few questions errrm In the department that you're working in what is the typical workload/list like that per session?

P: well we do long session and that's why I'm off today - so we do 8 - 6pm - so starting at 8 in the morning I have patients booked every 15 minutes

I: every 15 minutes?

P: every 15 minutes - errm there's usually erm they try to build in one these slots maybe 2 in the morning because you're probably going to get one from the A&E or you know something else passed on to you

I: and that's in general?

I: yeah yeah and then after lunch its the same every 15 minutes - we do have a little bit of a gap between like are early morning lists errm like our patients at 8 - 8.15 and 8.30 but then I have a gap at 8.45 before the 9am list - its sometimes just switching rooms and if errm you know like if another Dr is coming in they may want to be able to set their room up and stuff before their list starts and the same with the evening lists there'll be that extra 15 mins gap so before your late list starts -

I: Talking to sonographers within the department what do they feel that are the current pressures in their working life at the moment?

P: errm I mean honestly time is the main constraint because with the NHS there's so much pressure on you to meet all of your target times - patients can't wait and you know if they come into the A&E there's only so many hours where they breach and all of those things - you feel so much pressure on you to get the patient's in and out as quickly as possible - and so when something, you know when something goes wrong and you see - you're scanning someone and you see something unusual and you - you know you want to get a second set of eyes on it and stuff you have that added pressure of knowing its pushing your lists further

behind and your lists are going to be running late and the patients are going to be complaining and all of those things so yeah its tough -

I: What in general - what is the staff moral like in the department?

P: generally it's pretty high - we all have you know everyone has their moments and there are days when (laughter) - if we all have our day on the same day then that's like - it's in general we have a good team like everyone pitches in and we all work together you know if someone else is behind and we're running ahead we'll grab one of their patients to help them out and things like that - I think it's a nice place to work it's a nice department

I : Is there an expectation for you to work weekends and evenings on top of your normal working hours?

P : Not currently but that's always something that errm is being bandied about errm in the future.

I: is this 7-day working errm going to be an added pressure?

P: sure - sure

I: in what way?

P: Well it eats into more of your time and it makes it hard to schedule anything outside of your work life

I: In your opinion how do you perceive the future of sonography within the UK?

P: I think it has a bright future - I really do - there are constantly new technologies and things coming on board - its constantly growing and changing and there's such a need for it and because of comparatively speaking to you know MRI and CT it's much more cost effective so there's always going to be a role for it and we are learning more and more everyday things we can see with ultrasound and ways to use it and I've just learned so much doing like the MSK imaging because that's something we don't have really any of in the US but it's so prominent here and it's so fascinating just learning it and seeing all of the extra things that you can do that the machine are capable of seeing

I: Do you think the role of the sonographer in the UK is much wider and more opportunities than what you had in the US?

P: Currently yes - yes I would say that because that's why even though my Masters is done I'm not going home yet cos right now I still have more career opportunities right here - there are things I'm allowed to do here that I'm not allowed to do in the US - that are even more that structured.

Appendix 15 – Pilot interview Schedule

Interview Structure

- Welcome and introduction

- Affirmation of consent and ability to record

- Commence questions

    1. Ice breaker to clarify the professional background of the participant - Can you tell me a little bit about your professional background?

    2. What do you understand about the concept of clinical competence?

    3. Do you think it is possible to develop a competence framework for band 5 and 6 sonographers that aligns with the 4, 7 and 8?

    4. What areas of practice should be included as competences?

    5. A competence requires certain competencies to be achieved what do you think these would include for a band 5 sonographer?

    6. Competencies have skills embedded within them that can be measured what do you think they should be for a band 5   band 6?

    7. Could there be some generic competences for sonographers similar to those for AHP's in the HCPC SoPs?

    8. What will differentiate the competences from band 5 to 6?

Appendix 16: Phase 1 and 2 Interview Schedule

Interview Guide

- Welcome and introduction
- Affirmation of consent and ability to record
- Ice breaker - clarify the professional background of the participant

GUIDE

Phase 1: Research Question	Interview Question
What do we mean by clinical competence?	**How would you define clinical competence?** **Are there key areas of clinical practice that can be used to determine competence?** **What do you understand about the meaning of clinical competencies and skills?**
How do the clinical competencies band 5 competencies differ between bandings?	**What are the key clinical competencies that define the clinical role of a band 7 sonographer?** **In your opinion what could be the role of a sonographer and the clinical competences associated with this role?** **How would band 6 sonographer clinical competencies differ from the bands 5 and 7?**
Is it possible to create a clinical competence framework that includes band 4 – 8 sonographer sonographer practice?	**In your opinion do clinical competence frameworks help to define clinical role?** **Are there any clinical competence frameworks that could be used to help create a** **clinical competence framework?** **What challenges do you perceive to be potential barriers to developing a complete**

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clinical competence framework for Sonographers

Phase 2: Research Question	**Interview Question**
Working world	**What is your typical workload/list?**
	Do you get breaks?
	What are patient waiting lists like?
	What are the current working pressures?
	Why have we got a workforce deficit?
Future of sonography	**How do you perceive the future of sonography**
	If Band 5 and 6 are is not the answer what is?
	Who is responsible for securing the future of Sonography?
	How do we move forward to address the
issues	
	faced by the workforce and service providers?

Is there anything else you would like to add?

Conclude interview with a brief summary of the key outcomes of this interview

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APPENDIX 17 – NVivo advanced tools

Top Level Themes

Protectionism

Category	Value
FEAR/ANXIETY	18
VALUE	
CULTURE /TRADITION	
REGISTRATION	
PROFESSIONAL BODIES	6
TRAINING	6
QUALIFICATIONS	30
BANDING	28
US WORKFORCE DEFICIT	15
SONOGRAPHER ATTITIDUES	
RADIOLOGIST	
AUTONOMOUS/INDEPENDENT PRACTICE	
COMMUNICATION	11
REPORTING	
KNOWLEDGE	
DIAGNOSIS	11
SAFETY	4

■ Series1

Implementing Change

Series1

Word Map of Frequency within interview narratives

Word Trees

Word tree for "fear":

into it but I think
I'm always – its created a
of their profession and its
down – it will be
come from and → it's → the → **fear**
them . I think
think it is just
the sonographers resistant to change ?
to do everything becasue for
we are comfortable we're in
we need to acknowledge this

factor - even if they are
in me – I don't know
is a big thing and
mainly – down banding etc : How
change → errm and its / – I don't then
of → Interviewer Midwife Sonographers who
misssing something or being
the unknown and then
you know what happens
or what feeds it and

Word tree for "protection":

demonstrated a massive professional identity
whether there were any data → **protection** → and to a certain extent
issues – whether they went to

Word tree for "threatened":

a lot of people feeling
2 errm and
workforce to implementing → Everybody feels
that you say sonographers → feel
under pressure and they
feel their band 7 is
makes them feel even more → **threatened**

and the profession already has
at the thought of being
in terms of their role
of down grading why do
that it's a way of
they'll think they'll be down
when something like that comes

APPENDIX 18 : Research Diary

Rationale:

The researcher diary allows the researcher the space to step back and become a spectator of the data, facts and reconstruction of the knowledge which gives them a broader and deeper understanding of the new knowledge being generated (Morrison, 2002). The diary creates a better understanding of the assumptions and perspectives of the researcher that distort and bias their interpretations, making the unconscious conscious. A researcher who is committed to a vision is arguably vulnerable to bias and misattribution and whilst this cannot be prevented acknowledgement of the attachment to a standpoint within the research diary facilitates identification and minimizes the potential for distortion of the research findings. Emotions such as fear, desire and hope all affect how we think, perceive and remember events and this is not to be underestimated in the research process. By documenting, reflecting and reconstructing events using a researcher diary we can incorporate these emotions into the data set thereby improving the rigour of the research process. Altrichter and Holly (2005) support this by stating that the research diary is not just an aide-memoire but provides a process whereby new perceptions and connections can be made by bringing together emotional and cognitive elements that enable higher levels of analysis, synthesis, interpretation and portrayal.

This exploration of the use of researcher diaries to facilitate critical reflective and reflexive practice has demonstrated to me that it is not just a procedural tool for documenting research at particular stages. It is integral to the formulation of new connections and insights that enhance the conceptual development of the research project. Reflexivity allows the researcher to place themselves in the research process; being immersed facilitates a self-awareness that can create a greater depth of understanding of the real issues and knowledge to be explored.

Research Dairy Excerpts:

August 2014:
Developing my research idea is tough going but settled on developing a graduate sonographer clinical competency framework that will define the clinical role. This fits in quite well with what I'm doing in my professional role and will be useful when I start to develop a BSc sonographer programme.

October 2014:
DPS1 completed and presentation done. The presentation experience wasn't too bad and has helped me clarify a few things for my project and has given me some brilliant direction. The rapporteur's feedback was very helpful and made me appreciate things I had not considered.

Jan 2015:
Really hard to keep motivated but learning quite a bit from doing the literature review. It's proving a challenge to separate my role as academic lead for developing the BSc Diagnostic Ultrasound course and my role as a researcher. I need to be aware of my professional influence over the project and ensure my preconceptions and biases do not contaminate the research at any point in the process.

August 2015:
Met with my supervisors today regarding the interview data so far. The data is not taking me on the journey I wanted it too. I've had to step back and realise that the project has taken a different path and let it dictate where we go – this is scary – I don't feel in control – it's also frustrating as I will not get my clinical competences to develop the undergraduate programme. However, looking on the bright side at least I won't have to undertake a Delphi questionnaire and undertake a quantitative analysis – stats are a mystery to me.

March 2016:
Meeting with my supervisors today was very positive. I've been struggling with epistemology for a while now – it's so confusing – when I think I understand it I go and read about something else and I'm back to square one again. However, after talking it through I am now happy with my theoretical framework and methodological underpinning and confident to state this in my thesis.