Uncovering the Managed Heart of Australian Sonographers:

Professionalism and Emotional Labour in Routine Obstetric Ultrasound

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Submitted in partial fulfilment of the requirements
of the Master of Research (MRes) degree

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Submitted 24 April 2017

Table of Contents

ABSTRACT II
STATEMENT OF AUTHORSHIP III
ACKNOWLEDGEMENTS IV
INTRODUCTION 1
CHAPTER 1:
IS SONOGRAPHY A PROFESSION? 4
Introduction *9*
A History of Ultrasound in Obstetrics *9*
Education Pathways to Registration *9*
Industry Regulation and Safety *16*
Is Sonography a Profession? *19*
Conclusions *22*
CHAPTER 2:
THE SONOGRAPHER'S DILEMMA 24
Introduction *27*
Medicalisation within the Biomedical Model *27*
Doing Family *28*
The Sonographer's Dilemma *30*
Conclusions *31*
CHAPTER 3:
THE PROCESSES AND PRODUCTS
OF ROUTINE OBSTETRIC ULTRASOUND 37
Introduction *41*
Impression Management *41*
Emotional Labour *42*
Expert Images and Objective Self-Fashioning *44*
The Cyborg Fetus *50*
Social Media *52*
Conclusions *55*
CHAPTER 4:
THE BONDING CONTINUUM 58
Introduction *62*
Ultrasound is a Medical Test *67*
Psychological Uses for Bonding *67*
Between Psychological Uses for Bonding and Routinisation *69*
Bonding as a Part of Routine Ultrasound *70*
Women's Choice *72*

Pro Bonding *74*
CONCLUSION 76
REFERENCES 78
APPENDIX 1:
INTERVIEW PROTOCOLS & PARTICIPANT INFORMATION 80
INTERVIEW PROTOCOL - SONOGRAPHER. 83
INTERVIEW PROTOCOL - SOFTWARE ENGINEER/PHYSICIST. 89
INTERVIEW PROTOCOL - STUDENT SONOGRAPHER. 95
INTERVIEW PROTOCOL - PREGNANT WOMAN. 96
PARTICIPANT INFORMATION 98
APPENDIX 2:
MACQUARIE UNIVERSITY HUMAN ETHICS APPROVAL 99

List of Figures

FIGURE 1: SONOGRAPHER WORKPLACE DISTRIBUTION II

FIGURE 2: PHOTO TAKEN IN THE WAITING ROOM AT THE PRIVATE OBSTETRICS AND GYNAECOLOGY ULTRASOUND CLINIC IN WESTERN SYDNEY WHERE KEIRA WORKS. III

FIGURE 3: THE BONDING CONTINUUM IV

Abstract

Practices of professionalism and emotional labour are integral to sonographers' performances of routine obstetric ultrasounds. Sonographers possess the ability to negotiate the increasingly complex requirements of diagnostic screening tests conducted during routine obstetric ultrasound. This ability is juxtaposed with their capacity to meet patient expectations of positive social interactions and the production of ultrasound images as baby's first pictures. This research utilised thematic analysis of thirty interviews with Australian sonographers to uncover their engagement with the invisible practices of professionalism and emotional labour. The key themes uncovered can be categorised into processes and products. The processes were performative as sonographers engaged with professionalism, impression management, and emotional labour. The products were the creation of expert images and the cyborg fetus, each of which has implications for sonographers beyond the medical context of the scan room. In uncovering the practices of professionalism and emotional labour, it becomes apparent that the role of the sonographer in the social aspects of pregnancy care as well as the medical is vastly more complex than previously envisioned. Such a discovery highlights the need for industry recognition of professionalism and emotional labour as specific functions of the sonographer's role, and the need for provisions to be made for training and supporting sonographers in these invisible skills.

Short Abstract:

Professionalism and emotional labour practices are integral to sonographers' performances of routine obstetric ultrasounds. This study utilised thematic analysis of thirty interviews with Australian sonographers to reveal their engagement with the invisible practices of professionalism and emotional labour. The key themes uncovered can be described as processes (professionalism, impression management, and emotional labour) and products (expert images, and the cyborg foetus). In uncovering these practices, it becomes apparent that the performance of the sonographer in the social aspects of pregnancy care as well as the medical is vastly more complex than previously envisioned.

Statement of Authorship

MACQUARIE University

HIGHER DEGREE THESIS
AUTHOR'S CONSENT
MASTERS DEGREE

This is to certify that I, ...Sarah Emily Cameron..... being a candidate for the degree of **Master of Research**, am aware of the policy of the University relating to the retention and use of higher degree theses as contained in the University's Higher Degree Research Thesis Preparation, Submission and Examination Policy.

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Zoe James .....
Full Name & Signature of Witness
Date: 24/04/2017

Acknowledgements

I am enormously grateful to Colin and the staff at the Australian Sonographer Accreditation Registry for their interest in the project and their support in posting my research advertisements through the ASAR email list. This project would not have been possible without such dedicated support from ASAR and its sonographers.

I wish to express my deepest gratitude to Benjamin* and his staff, who allowed me into their department and provided the opportunity to witness first-hand the way sonographers work and to engage with the realities of a clinic environment. Thank you for your light-heartedness and warmth in welcoming me into your lives.

To all the sonographers who participated in interviews, I am honoured beyond words for your time, patience, and courage in sharing with me some of the most uplifting as well as devastating aspects of your work and lives. Thank you; you made this not only possible but also a pleasure. I must also say thank you to the many sonographers whose specialisation did not allow them to participate but who replied to my ad anyway, with emails full of kind words and support.

A very sincere thank you to my supervisor Professor Greg Downey, for the many lengthy and animated conversations which helped me to engage with anthropology and for your guidance and insight into the project.

Thank you to the staff of the Macquarie University Anthropology Department for always having your doors open to me and for taking the time to answer my questions. A particular thank you to Payel Ray for always knowing where everyone was and how to get the nitty-gritty paperwork done.

On a more personal note, my heartfelt thanks to Isaline Biloe and Fiona Bennett for regularly dragging me out of the house to walk the dogs. I am sure that the fresh air and exercise did as much to move the project forwards as the long hours at my desk.

To my dear friend Zoe James, thank you for always having an ear and a heart which I could count on. Our conversations kept me grounded and ensured that I continued to approach the process without expectation.

Michael, my husband and my best friend, no words of thanks will ever be enough to acknowledge all of your support in this journey. Thank you for always having my back and believing in me.

Uncovering the Managed Heart of Australian Sonographers:

Professionalism and Emotional Labour in Routine Obstetric Ultrasound

Introduction

Sonographers use professionalism and emotional labour in the performance of routine obstetric ultrasounds. As yet, these skills are unrecognised by the regulatory and educational bodies which set the standards for sonographers in Australia. The implications of this are that sonographer learn these skills on the job and often struggle to find a balance between the medical obligations of their role and the social expectations of patients. The important outcomes of recognising these invisible practices of professionalism and emotional labour are to gain industry acceptance, support and training for sonographers to improve job satisfaction, and reduce unnecessary stress.

There already exists an increasing volume of research about what happens to women and their families when a routine obstetric ultrasound results in a diagnosis of foetal demise or abnormality, but very little about how sonographers cope with these diagnoses and family practices themselves.[1] The literature on sonography, written by sonographers, radiologists, obstetricians, and researchers, primarily focuses on clinical outcomes and only occasionally touches on the topic of 'breaking bad news'. What each of these bodies of research fails to consider is the fact that sonographers are humans, not machines, and although they fulfil both medical and social roles they are also engaged in acts of professionalism, emotional labour, and impression management as they curate the performative spaces of routine obstetric ultrasound and manage the feelings of their patients as well as their own feelings

[1] For literature on pregnancy loss memorialisation, and support groups for women and families who experience late term miscarriage and stillbirth see Keane (2009), Pector (2012), Lupton (2013), Martel (2014), and Komaromy and Earl (2016).

and personal experiences. This thesis begins to address this gap in the research by analysing the experiences of general and specialist sonographers in Australia as they negotiate the performative space of the scan room during routine obstetric ultrasound examinations. This aims to highlight the many facets of interaction sonographers contend with, and the explicit and implicit strategies they have for doing so.

The purpose of using ultrasound as an obstetric screening tool is causally tied to understandings of pregnancy as risky and the medicalisation of pregnancy as risk management.[2] This is particularly true of invasive screening tests such as amniocentesis and chorionic villus sampling, which in themselves introduce additional risks of miscarriage. The routine use of amniocentesis and CVS testing, as well as newer non-invasive prenatal testing (NIPT), is arguably eugenics, although this is rarely if ever discussed outside the academy.[3] There are also issues of women who become pregnant using assisted reproductive technologies (ART) as genetic screening, counselling, and often sex selection are a regular part of such technologies - in the name of health.[4] There is also a growing body of literature on foetal personhood and the implications of foetal rights for women.[5] However, this thesis aims to deal exclusively with the sonographer's experiences of professionalism and emotional labour during routine obstetric ultrasound.

[2] For literature on pregnancy as risky and risk management in pregnancy see Murphy-Lawless (1998), Jones (2007), Lupton (2012), Hallgrimsdottir and Benner (2014), Rothman (2014), and Ross (2015).

[3] Although it is rare for patients or providers to couch genetic testing in terms of eugenics, the presence of these tests and patients' decisions to utilise testing and to follow through with selective terminations when the odds are not in their favour suggest that there is more to be explored. See Dever and colleagues (2013), Rebouché (2015), Stern (2014), Beulen and colleagues (2016), Ummel (2016).

[4] For an overview of ART literature see Inhorn and Birenbaum-Carmeli (2008).

[5] For philosophical debate on personhood, and the boundaries of tissue markets, see Mills (2014), Waldby and Balsamo (1999).

The project initially aimed to understand women's perceptions of foetal personhood through their experiences of routine obstetric ultrasound, however the emergent data from interviews with sonographers was so fascinating that the focus of the fieldwork shifted to the sonographers. The data was collected from semi-structured narrative interviews. Participants were self-referred or referred by snowball sampling from an ad posted to the Australian Sonographer Accreditation Registry (ASAR) email list, as well as from posts made to social media, parenting and pregnancy forums, and groups for Australian pregnant women. Participants included four pregnant women and thirty sonographers. Whenever possible interviews were conducted face-to-face, when this wasn't possible due to geographical or time constraints interviews were conducted via phone or Skype. Eleven interviews with sonographers were conducted face-to-face while the remaining nineteen were conducted via phone or Skype. Similarly, one interview with a pregnant woman was conducted face-to-face while the remaining three were conducted via phone or Skype. All interviews were audio-recorded with the participants' consent. All audio has been compiled digitally and analysed thematically with the aid of NVIVO. Of the thirty sonographers one was currently pregnant, one was studying for their registration, and one was recently retired; the other twenty-seven were employed part-time or full-time in various practices around Australia (see Appendix 1). The sonographers' practice experience ranged from several months through to thirty-one years, and their places of employment were categorised as either public or private and either in a hospital or clinic setting (see Figure 1). There were an equal number of public and private practitioners, and six of the thirty were men. Of the six men, two were sole practitioners in rural practices, one held a

management position in addition to their role as an obstetric practitioner, one held a teaching and advisory position in addition to their role as a general practitioner, one was in private general practice, and one was a limited O&G sonographer from a midwifery background. In comparison, one woman held a teaching and research position and one was a sole practitioner in a regional practice. Women appeared to have higher levels of education and qualifications, although this is not conclusive. The ASAR statistics suggest that 23.79% of registered sonographers are men, while within this sample 20% were men (ASAR, https://www.asar.com.au/about/sonographerstatistics).

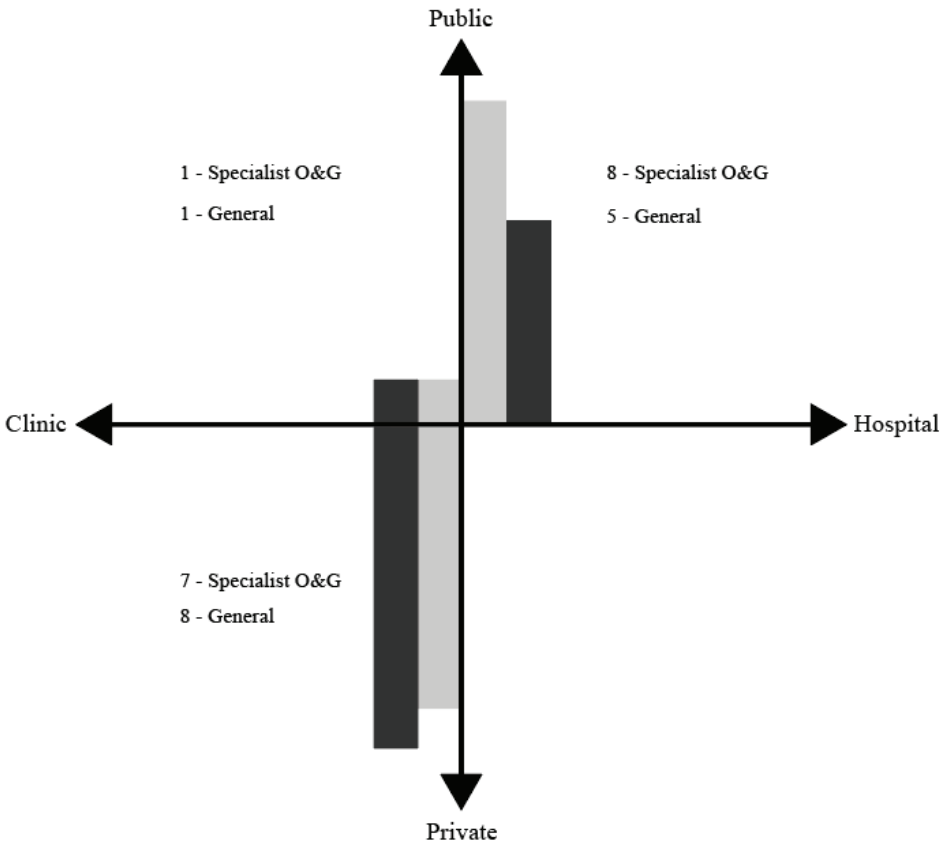

Figure 1: Sonographer Workplace Distribution

The first two chapters of this thesis progressively build up theories of professionalism and double bind theory using examples from sonographers' interviews, while the third chapter explores the processes and products of routine obstetric ultrasound. The fourth chapter functions as a case study, to illustrate the ways each of these theories resides within one particular continuum within the field of sonography.

Is Sonography a Profession?

Chapter 1 unpacks issues of professionalism using Freidson's (1970) sociological understanding of the profession of medicine and seeks to position sonography as a paramedical occupation within the profession of medicine to explore the ways sonographers practice professionalism. The challenges to profession and professionalism are the ambiguities within the medical hierarchy, differences between the roles of generalist and specialist sonographers, and the variations in education pathways. These challenges are traced through the history of ultrasound in obstetrics by drawing on Kevles (1998) and Oakley (1984) and connected to the current education and training pathways to registration using documentation from ASUM (2015), the Australasian Society for Ultrasound in Medicine, and ASAR, the Australian Sonographer Accreditation Registry. With the use of Hassall's (2007) review of sonography as a profession in Australian and a return to Freidson's (1970) work, the interview data illustrates the processes sonographers' engage in when they practice professionalism.

The Sonographer's Dilemma

Chapter 2 outlines the ways sonographers engage in communication practices with their employer and with patients. This chapter centres on Bateson and colleagues' (1956) double bind theory, which is utilised as a way of understanding no-win situations. By expanding on Bateson and colleagues' ideas, the notion of the sonographers dilemma is formed as a way of exploring the boundaries of routine ultrasound, and the implications of unscripted and unexpected situations and interactions. Resultantly, double bind and the sonographers dilemma are revealed - through a reading of Teijlingen's (2005) medical model, and Cahill's (2001) definition of a biomedical model - as processes and practices which shape the sonographers performance within the scan room. By utilising these theories, it is then possible to frame the work of Mitchell (2001) within the context of the sonographers dilemma. And to draw on the ideas of Kroløkke (2011), Johnson (2014), and Roberts and colleagues (2015) to explore the idea of routine obstetric ultrasound as a biotourist experience facilitated by sonographers with the aim of allowing parents to engage in 'doing family'. Therefore, it becomes apparent that the role of the sonographer within routine obstetric ultrasound is to act as the gatekeeper of medical and social meaning and to facilitate the transition from fetus to baby.

The Processes and Products of Routine Obstetric Ultrasound

Chapter 3 examines the outputs of routine obstetric ultrasound. These outputs are processes and products, each of which is not possible without the sonographer. The processes of routine obstetric ultrasound are; impression management as drawn from Arndt and Bigelow (2000), and Emotional Labour as discussed by Arlie Hochschild (1983) in her book The Managed Heart. Both of which are utilised in the discussion of the role of acting and actors proposed by John (1996), and Lewin and Reeves (2011). The first two products of routine

obstetric ultrasound are "expert images" and practices of objective self-fashioning as framed by discussion of Dumits' (1999; 2011) work on brain imaging and the virtual communities.The third product of routine obstetric ultrasound is unique, in that, the cyborg foetus as the socially constructed representation of the baby, as discussed by Kroløkke (2011), Mitchell & Georges (1998), and Martin (2001), is the only product which actively leaves the medical context of the scan room. Additionally, the notion of the cyborg fetus begins to address the issue of social media, and sonographers' engagement with online narratives and their understandings of patients expectations as illuminated by Wells and colleagues' (2015), and Ofri (2015).

The Bonding Continuum

Chapter 4 works to illustrate the ways in which the application of these theories is not practical or tidy. It introduces the idea of bonding as a continuum of ideas and patient expectations within which sonographers must work and in doing so, highlights the ambiguity and contradiction inherent in the sonographers dilemma and the processes and products of routine obstetric ultrasound. That is, the purpose of exploring the bonding continuum is to signify the interrelatedness of theory and practice within sonographers lived experiences of the performative spaces of routine obstetric ultrasound.

Chapter 1:

Is Sonography a Profession?

Introduction

This chapter sets up the way in which sonography as a paraprofession operates under the authority of medicine. This is illustrated through a series of steps which build towards understanding how sonography is situated within the profession of medicine. Firstly, a history of ultrasound in obstetrics, which highlights the technological development of ultrasound and women's experiences of ultrasound in current models of pregnancy care. This section also identifies what routine obstetric ultrasound scans are and what they are generally looking for. Secondly, I outline the educational pathways open to sonographers and the way registration is connected to professional development. Thirdly, I touch on issues of industry regulation and the safety of ultrasound as an imaging modality. Finally, I ask whether sonography is a profession. Using Eliot Freidson's book *Profession of Medicine: A Study of the Sociology of Applied Knowledge* and the insights from the first three points, I conclude that sonography is a paramedical occupation and that sonographers are paraprofessionals who practise professionalism in their role to meet the expectations of their employer and the patients.

A History of Ultrasound in Obstetrics

A brief history of ultrasound reveals that ultrasonography or ultrasound was adapted from military sonar after WWII and was rapidly repurposed as a medical treatment and then imaging modality (Kevles 1998). The development of ultrasound occurred primarily

through intensive research groups between 1959 and 1970, at which point it was introduced into clinical use. Ultrasound machines were initially developed as a form of physiotherapy treatment, though it quickly became apparent that the technology could be used to create images of internal organs in a way that previously had not been possible. In her book *Naked to the Bone: Medical Imaging in the Twentieth Century*, Bettyann Kevles notes that although ultrasound is applied to many general and specialist medical examinations "...only in obstetrics did it become a cultural as well as a clinical necessity" (Ibid., p. 230). Gina, a lecturer in ultrasound physics, explained how ultrasound as a technology works:

> How ultrasound works? Ok, so it's sound … and it's higher than the sound of human hearing so we can't actually hear it … So it's a wave, a mechanical wave, it requires a medium to travel through, … so that sound waves passes through the patient, and when the wave interacts with something strong enough to reflect it, it reflects back to the transducer which propagated the wave in the first place. So … the probe that we use is a special instrument that's called a transducer, and a transducer is something that can convert one type of energy into another. So in this case it's converting voltage change into a pressure sound wave and vice versa, so when the sound wave hits the ultrasound transducer it is converted into electrical current that the machine recognises the different voltage of the current and relates that, or correlates that with pixel intensity.
>
> - Gina

Modern ultrasound consists of two parts, a computer and a transducer. The computer has different algorithms which control the way the transducer sends and receives voltage and sound waves. The computer sends a signal to the transducer as a voltage; the transducer converts the voltage into a mechanical wave which travels through the patient's body and bounces back at different frequencies depending on the type and density of the tissue. The transducer picks up these echoes and converts them back into a voltage and sends this back up to the computer, which converts the voltage information into an image on the screen via its algorithms.

In the early stages of research Australia played a significant role in the development of ultrasound as a medical technology. In 1959 the Ultrasound Research Section was created within the Commonwealth Acoustic Laboratories. The Ultrasound Research Section soon became an international research focus (ASUM 2015). In 1975 the Ultrasound Research Section separated from the Commonwealth Acoustics Laboratories to become an independent entity, the Ultrasonics Institute (UI). The UI continued to be a major part of the research and development of ultrasound and its clinical application until 1997. The most revolutionary development in research conducted at the UI and the leading Australian innovation was the application of greyscale mapping to ultrasound imaging. This breakthrough was made by George Kossoff and colleagues in 1969, and was made more accessible with the advent of applying computer technology to ultrasound imaging in 1973 which allowed for real-time or live scanning (Kevles 1998, pp. 243-44; Griffiths 2004, p. 22; ASUM 2015). Before this, ultrasound had been viewed in real time on an oscilloscope or mapped in black and white onto 35mm film (Kevles 1998, pp. 235-36). Greyscale mapping and computer technology dramatically improved image quality, as distinct strength echoes could now be mapped in varying shades of grey and this allowed for more subtle distinctions between tissue types (Griffiths 2004, p. 22). Greyscale mapping is of particular importance to obstetric ultrasound as it allows discernment between the maternal and foetal tissues, as well as between different tissues and structures within the foetus that were previously indistinguishable. The use of varied tonal ranges continues and is elaborated on by Gina in the following excerpt from her interview:

> Some machine companies are more focused towards obstetrics; some are more focused towards their musculoskeletal populations, so it does depend on that. … The big four [are] Toshiba, Siemens, GE, and Philips, they all can do everything, but GE sort of has that obstetric sphere covered a little bit more, they're are the ones that do more of the smoothing of the image, more of a dumbing down of the image. Siemens tends to like a purer image, they like to leave the interpretation of what's going on to the sonologist or sonographer. … Then [there is] everything in between.
>
> The technology of ultrasound is actually insanely simple. … It's all the stuff that goes behind, and even that's… quite simple. Just knowing ... what you want it to do, then just the maths of it, just how fast it's going and then calculate it then ... the machine will send out a pulse. You've assumed this, and you've assumed that and you know the frequency … so you wait 0.16 of a millisecond for the sound to come back, and it should have all come back and then send another pulse. So it's not too bad, it's just lots of hairy maths.
>
> - Gina

Gina explains the different ways in which machine companies focus their research and their product development for specific medical niches. The smoothing she talks about in obstetrics is the process of changing the tonal range of the greyscale mapping to show a more photorealistic image, an image more pleasing to the untrained eye. The process of smoothing ultrasound images, which Gina refers to as "dumbing down", reduces the amount of detail available in the scan and therefore the clarity and subtlety of what sonographers can read in the images. In contrast, musculoskeletal imaging has a more limited tonal range and shows more stark contrast, and as such more clarity in the details. However, it is not common for patients to view these images. This is where Dumits' theory of "expert images" comes into play, as apparently readable by the lay person but in reality requiring the guidance of an expert (1999, 2012). Expert images will be elaborated on in Chapter 3. As each machine can be used for many different types of scanning, the pre-sets of the device can be determined by the sonographer at the time of examination. The pre-set automatically selects a greyscale map, as well as a dictionary of terminology and

measurements appropriate to the type of scan whether it be gynaecological, obstetrics for the first, second or third trimester, musculoskeletal, cardiac, etc. Gina goes on to discuss that once you get beyond the maths, the technology of ultrasound is very simple. The math, in this case, is the physics used to develop the algorithms relating to wave structures, pulse patterns, and the timing of returning echoes. These algorithms reside in the software which converts the voltage and sound signals of the transducer to produce images on the screen. The complexity of the math may also be inconsequential to the daily practice of sonography; Koch suggests that "a system having a nightmare of complexity to the physicist may be considered simple by the biologist in his blissful ignorance" (Koch *in* Kevles 1998, p. 238). In the context of inconsequentiality, the sonographer may be deemed ignorant of the many behind-the-scenes workings of ultrasound technology. The inclusion of physics in the education of sonographers is critical, however if not continually used this knowledge may be lost. Sonographers' practice is based on what regularly works, not based on the knowledge and understanding of the behind-the-scenes or inner workings of the technology that they utilise.

In her book *The Captured Womb: A History of the Care of Pregnant Women*, Ann Oakley (1984) highlights the changing nature of pregnancy and presents the processes of technologisation and medicalisation. Oakley identifies that "the rise of antenatal care is part of the medicalization of life" (Ibid., p. 275). The increasing medicalisation of life, and in particular pregnancy and birth, was the domain of a new medical specialist: the obstetrician. The incentive to develop ultrasound for use in obstetrics came from the realisation of the dangerous and long-term effects of x-ray on the health of the imaged foetus (Ibid, p. 157). This incentive was catalysed on by several key individuals, the most

notable of which was Ian Donald, whom in conjunction with J. Macvicar published the first article on the use of ultrasound for obstetrics in the Lancet in 1958. The paper documented the diagnosis of abdominal tumours, some of which turned out to be pregnancies. The paper also went on to dissect the benefits and limitations of the technology and offer a demonstration of the safety of the technology. The increasing medicalisation of pregnancy meant that the clinical uptake of ultrasound imaging was rapid and by 1980 ultrasound had shifted from a diagnostic test for troublesome pregnancies to something that "should be regarded as integral to prenatal care" (Campbell and Little *in* Oakley 1986).

With significant advancements in technological developments, the role of ultrasound in obstetrics and pregnancy care has evolved. "Ultrasound in the 1970s was confined to high-risk pregnancies, but by the 1980s it had become routine ... In the 1990s, ultrasound has become a necessary confirmation of pregnancy and 'show and tell' object of parental pride" (Ibid., p. 247). In 2017 ultrasound continues to be perceived by women and their families as a necessary social confirmation of pregnancy, as well as having gained greater medical association with assisted reproductive technologies (ART) such as IVF. In a medical context, ultrasound is used as a screening test to identify and diagnose foetal demise, foetal abnormalities, and maternal and foetal disorders. The scans commonly offered and performed in Australia for healthy, low-risk pregnancies are: a dating scan[6] between six and

[6] Dating scans use a set formula for identifying fetal age based on baseline measurements and therefore are used for calculating an estimated due date. Depending on the gestation, a heartbeat may or may not be present. Dating scans are highly recommended by sonographers as they are the most accurate method of dating a pregnancy, especially as most women do not have what is medically recognised as the standard twenty-eight-day menstrual cycle with ovulation on day fourteen.

eight weeks; a nuchal translucency scan[7] between eleven and thirteen weeks; a morphology scan[8] between eighteen and twenty weeks; and growth scans[9] conducted in the third trimester. There are also several procedures which may be offered to women with high-risk pregnancies and women over the age of thirty-five. These additional tests include chorionic villus sampling (CVS)[10] and amniocentesis[11], both invasive procedures that carry an elevated risk of miscarriage.

Within the confines of public care, women have a choice of scans from which they can choose including a dating scan, a nuchal translucency scan, and a morphology scan, although choosing none is rare. Growth scans are only carried out within public care if

[7] Nuchal translucency assessments (NT) utilise the measurement of the nuchal fold at the nape of the foetal neck to assess risk for Downs Syndrome. NT scans are increasingly being replaced with non-invasive prenatal screening tests (NIPT) which utilise foetal genetic material in the maternal blood collected from a maternal blood test to identify risk factors for some chromosomal abnormalities. NIPT may be carried out earlier, around eight weeks, and can be utilised independently or in conjunction with a nuchal translucency assessment. NIPT are currently not part of Medicare and are not included in the majority of private health insurance policies. Therefore, they are paid for upfront and can cost from $0-$900 depending on the provider and whether the samples are processed locally or offshore. Additionally, NIPT identifies foetal chromosomal sex, though there is some debate as to the accuracy of this. The selection of fetal XX DNA within the maternal XX blood may be challenging, as is the ability to decipher the differences in DNA between a recent miscarriage and a current pregnancy.

[8] Morphology studies consist of a thorough and systematic review of the entire fetus. These examinations take between forty and sixty minutes, and sonographers may take as many as one hundred standard images within this time. The measurements and pictures are compiled into a report and are used to assess the growth and development of the fetus. The morphology scan is the point at which structural anomalies are identified. Some anomalies are considered benign and are inconsequential or will resolve naturally with time, such as enlarged kidneys. Others are deemed to be life-threatening and require immediate medical attention, whether this is foetal surgery or planning for surgery immediately after birth, for example for heart defects. There may also be conditions identified which are considered fatal, such as anencephaly (the failure to develop the upper regions of the brain and skull). Though these babies may be born alive their life expectancy is limited, from several minutes to several days.

[9] Growth scans conducted in the third trimester are usually for the purpose of checking up on earlier findings, locating the position of the placenta, or additional information on the size and positioning of the fetus. They may also be used to reassure an anxious mother, or as a routine part of private obstetric care.

[10] Chorionic villus sampling (CVS) is a procedure carried out between ten and fourteen weeks, usually via the cervix but occasionally through the abdominal wall with the guidance of ultrasound, to obtain a sample of tissue from the placenta. The sample is used to screen the foetal DNA for chromosomal abnormalities.

[11] Amniocentesis is a procedure carried out between fifteen and twenty-one weeks, to collect a sample of amniotic fluid removed from around the foetus via needle aspiration through the abdominal wall with the guidance of ultrasound. This sample is used to screen the foetal DNA for chromosomal abnormalities.

there is a medical need as decided by the woman's primary care provider, usually her GP or obstetrician. Within private obstetric care there is reason to believe most women choose to have all of the routine scans, and in addition that an ultrasound examination accompanies most if not all obstetric appointments, particularly in the third trimester.

Education Pathways to Registration

Lynette Hassall (2007), in her article 'Sonography- The Emergence of a Profession', highlights that to date there has been insufficient investigation of the educational developments and professionalisation of sonographers. In writing the article, she somewhat rectifies this by providing a brief overview of the evolution of serial educational pathways through which sonographers have received education and training and become accredited. However, Hassall's stand on sonography as a profession is based on this quote:

> A profession is a self-disciplined group of individuals who hold themselves out to the public as possessing a special skill derived from training or education and who are prepared to exercise that skill primarily in the interests of others.

from David Pennington, a high court judge in Ontario in 1951. I suggest that this definition is both too general and too liberal in its approach. As such, in the following section I seek to apply a more medically specific definition of profession, and ask whether sonography is in fact a profession.

The Australian Sonographer Accreditation Registry (ASAR) is the regulating body for sonographers in Australia. On their website, ASAR has a list of the approved courses. At present, there are ten conferring institutions which provide twenty-one different courses at either an industry or university level (ASAR -

https://www.asar.com.au//courseaccreditation/asaraccreditedcourses; McLean 2016). These courses are at the diploma, graduate diploma, or master's level. The students enrolling in sonography courses come from another medically focused degree, such as radiography, nuclear medicine, or medical research; or from an industry background which has provided them with a high level of practical medical and anatomic knowledge. The sonographers who participated in this research came from diverse medical backgrounds, primarily radiography, although one sonographer had previously been a midwife and another had started studying sonography after a partial degree in psychology. The exception seems to be, recently developed undergraduate courses, which at this point do not appear to be accredited by ASAR, sonographers must be working in the industry to participate in an accredited course. Hassall (2007) points out that there arises the issue of professional recognition; "it is a bizarre dichotomy – the Federal Government recognises sonographers Australia wide, but some individual state governments do not" (p. 32). This dichotomy creates a conundrum where sonographers may be registered nationally with ASAR, and comply with the Department of Health and Aged Care (DHAC) regulations for Medicare rebates, but are not legally supported regarding wages and working conditions within the state in which they reside and work (Ibid, pp. 32-33). The result is that sonographers are faced with the need to legitimise their profession and actively work to demonstrate their professionalism.

The disunity of educational pathways means that no two sonographers are alike in their education or practical experience. The educational pathways are, therefore, understood as an apprenticeship whereby at the end of the practical training a certain level of competence and expertise is expected. Such a model of apprenticeship is not uncommon within

medicine, although in other occupations there is more emphasis on a structured and guided approach to learning than is apparent within sonography. This competence and experience are what is examined at the end of a course and before registration. Also, to stay registered, sonographers must collect continuing professional development (CPD) points on a triennial basis (ASAR - https://www.asar.com.au//accreditation/sonographeraccreditation). CPD involves many different activities from interactive webinars to attendance and participation at conferences, and short courses run in-house at hospitals or the day before conferences (ASAR - https://www.asar.com.au/cpd/asarcpdprogram).

The diversity of educational pathways to registration is exemplified in the sample of sonographers who participated in this research (see Appendix 1 for a table of qualifications and experience). As such, sonographers may be generalists or specialists and their approaches and levels of expertise in scanning may vary significantly.

> As far as medical imaging goes, it is uniquely operator-dependent. The operator plays an integral part in the image you get. Two people, one novice and one experienced ... will get vastly different images of exactly the same thing.
>
> - Gina

> ...ultrasound is ... very ... operator-dependent. So that means that for every image that we take, we've spent a bit of time looking in real time as well before we take that image. So it's not just a quick image of the head, and that's the head finished, there's a bit of a scan through the head [to] make sure ...
>
> - Alice

Both Gina and Alice identify the unique nature of ultrasound as operator-dependent. The difference between their perspectives is that Gina equates operator-dependence with levels of experience, while Alice relates it to the ongoing process of conducting a scan. Both of

these perspectives hold true and, while a sonographer's competence may improve with experience, it is still possible to have the scan results skewed by other factors both within and beyond the sonographer's control. This foible of the technology means that education and continuing professional development to maintain accreditation are necessary to ensure a high standard of practice. However, as is apparent in the diversity of training pathways and the nature of general and specialist practitioners, each sonographer may have an entirely different repertoire and knowledge of the many different examinations which they are required to perform upon their patients.

Industry Regulation and Safety

At present, the technology of ultrasound is unregulated. This means that anyone who can afford to, can buy an ultrasound machine.[12] The reason ultrasound machines are unregulated is that, unlike other medical imaging modalities, ultrasound uses sound rather than radiation to produce images. This has several implications. Firstly, there are an unknown number of ultrasound machines in Australia and any machine outside of a medical context is likely operated by an unqualified, unregistered person (a layperson). Secondly, there are an unknown number of ultrasound machines being used by what Kevles (1998, p. 249) calls professional amateurs. Professional amateurs are usually obstetricians or midwives who have done a short course or some basic training in the use of ultrasound, but are not trained or experienced in the medical diagnostic aspects of scanning and are not registered with ASAR (Ibid.).

[12] The only apparent restriction on purchasing or importing an ultrasound machine is that it must be on The Australian Register of Therapeutic Goods (ARTG). However, a search of the ARTG online database (https://tga-search.clients.funnelback.com/s/search.html?query=&collection=tga-artg) shows 72 ultrasound imaging systems are available for purchase or import.

The sonographers who participated in this research expressed concern about the 'unregulated' and 'unregistered' people performing entertainment scans. Entertainment scans were defined by sonographers as scans conducted outside of a medical context, usually for the purpose of finding out the sex of the baby or for getting pictures and videos of the baby.

> We need to be careful about promoting it as entertainment, and then detracting from the fact that it is a serious medical scan that needs to be performed by people that know what they're doing, because often these entertainment-type scans are performed by people that don't know what they're doing, and so potentially patients could walk away thinking everything's fine with their baby and there's a major abnormality there that hasn't been picked up, and you wouldn't want them to think 'yup I've had a scan done it's ok' and to miss their important scan that's actually going to diagnose that medical condition because they're not aware that it's a medically important scan that needs to be done. So it's about patient education as well.
>
> - Diane

Diane's concern with entertainment scans is that patients may confuse the purpose of the medical scan and the entertainment scan and may substitute an entertainment scan in place of a medical scan. She links this concern specifically with the idea that patients are not well educated about the purpose and the importance of the medical screening tests.

There is also the controversial question about the safety of ultrasound as an imaging modality. There is often a dramatic difference in how sonographers approach the idea of safety, as illustrated by Todd and Dan:

> Well I guess everyone has a different view on it, but in the profession we are bound by the principles of ALARA, which is 'As Low As Reasonably Achievable'... and basically, albeit there have been no documented detrimental effects of the use of diagnostic ultrasound, but the philosophy goes the absence of evidence is not the evidence of absence. So unless medically warranted ultrasound should not be performed just willy-nilly basically for someone that wants a so-called bonding scan.
>
> - Todd

Todd's emphasis on an evidence-based approach was unique within this data. Most sonographers referenced personal experience or anecdotes unless prompted for a professional, medically-based opinion.

> I don't find any problem with that [ultrasound being used for bonding]. At the moment ultrasound has been around for a long time, and it seems to be safe. They're always checking all the time, people looking for something that might turn up in the future. But at the moment it's a very safe imaging modality, so I think it's quite a helpful tool for that reason, and that's part of the heart of it.
>
> - Dan

The contradiction about safety expressed by Todd and Dan suggests that perceived risks associated with ultrasound as a technology are negotiated in very different ways depending on the individual. The standard of 'not proven safe' compared to the standard of 'not proven unsafe' suggest differing perspectives on scientific efficacy, as well as the education and professional development standards of sonographers. Todd clearly identifies this challenge when he suggests that "the absence of evidence is not the evidence of absence". Intriguingly, both practitioners who raised this issue were men, working as general sole practitioners in a regional environment, and both had initially trained in countries other than Australia.[13]

[13] For challenges to the existing Australian Safety Standards, see de Crespigny (1995).

Is Sonography a Profession?

> I think the first thing … is a problem to overcome and once sonographers overcome the ... situation of being ... completely under the direction of radiologists ... once you move out from that umbrella and say well look ... this is my examination, I'm conducting this examination, and I'm interacting with this patient. I'm not here on behalf of the radiologist; I'm here as a person who knows how to do this particular test. Once you move out from under that particular restriction, then ... it really is necessary for the sonographer to ... start to understand how they react, and understand how they interact with patients. I think that would be ... one thing to make clear to sonographers in their interactions with patients, that they're not actually ... the hand maiden of the radiologist, they're actually doing an examination in their own right, and it's their responsibility to interact with the patient. ... Empower sonographers with that total responsibility for the examination.
>
> - Terry

The problem Terry is discussing is that sonographers work under the direction or guidance of radiologists and on the orders of a woman's primary care giver, usually an obstetrician or GP. That is, sonographers have little if any autonomy in their occupation; their actions and patients are dictated to them, and their work and interactions are closely supervised. Eliot Freidson (1970) defines "paramedical" occupations as occupations which are organised around the work of healing but are controlled by physicians. Therefore, sonography is a paramedical occupation. The problem Terry identifies is endemic to the hierarchical organisation of medicine and is unlikely to change, as sonographers without a stream of referrals from physicians and the supervision of radiologists would have no patients, and as such, would have no place in medicine. As such, it becomes important to understand the differences between 'a profession' and 'professionalism'. According to Freidson, a profession is an occupation which is characteristically autonomous. That is, the occupation determines its own education and training, is bounded by legal recognition and licensing of its members, has relative control over its legislation, and its practitioners are relatively free

of lay control and evaluation (Freidson 1970, p. 77). Paraprofession's may exhibit all of these characteristics, but are distinguishable from professions by their lack of "autonomy, responsibility, authority, and prestige" (Freidson 1970, p. 49). Professionalism, on the other hand, is defined by a set of attributes characteristic to professionals. These attributes include a commitment to one's work as a career so that work becomes part of one's identity and an emphasis on public service not private profit (Freidson 1970, p. 70). Freidson points out that, "professionalism seems able to exist independently of professional status" and thus paraprofessionals such as sonographers display high levels of professionalism (Freidson 1970).

The reason Terry sees the problem of sonographers as paraprofessionals as a "restriction" is because of the division of labour in medicine. Freidson (1970) identifies the division of labour in paramedical occupations as physician control of what is deemed important to the education and training of the paramedical worker as well as what tasks are performed by paramedical workers, and that both the education and tasks assist rather than replace the physician's task of diagnoses and treatment (Freidson 1970, pp. 48-49). As such, Terry as an educator wants to improve sonographers' interactions with patients by raising sonographers' perception of themselves as knowledgeable and capable practitioners. What Terry is asking of his students, then, is to have pride and humility in their work as part of a team of medical professionals, the referring physician, the supervising radiologist, and the sonographer, each of whom have their own function in the care of the patient (Freidson 1970, pp. 67-68). However, in taking responsibility for the examination, the diagnostic imaging, and the patient interactions it becomes important for sonographers to begin to engage in practices of impression management and emotional labour. To "empower

sonographers with that total responsibility for the examination" is to offer them more independence and control of their work, but also to burden them with the dilemma of whether to prioritise the medical or the social aspects and interactions of their role.

Conclusions

Ultrasound as a technology works by creating pulsed sound waves that are sent through the body. These waves echo back with varying intensity when they encounter tissue, the subtle differences of which are recorded and reflected in the greyscale image on the screen. A sonographer is the practitioner who manoeuvres the ultrasound probe and reads and interprets the images on the screen. The technology of ultrasound has been applied to many medical specialties but holds particular importance in obstetric care, as it allows viewing of the foetus for the purpose of diagnosis and treatment of disease and abnormality. During pregnancy women are offered a series of ultrasound examinations for the purpose of accurately dating the pregnancy, screening for chromosomal abnormalities such as Downs Syndrome, and to check for structural defects such as cleft palate and holes in the heart. Ultrasound imaging is also utilised in additional invasive testing such as amniocentesis and chorionic villus sampling where the physician, guided by ultrasound, takes samples of amniotic fluid or the placenta for further genetic testing.

By briefly touching on the proliferation of educational pathways by which sonographers can gain registration and the process of continuing professional development, it is apparent that it does not meet Freidson's (1970, p. 78) criteria of "prolonged", "specialized", and "abstract" as required of a profession. In conjunction with the unregulated nature of

ultrasound as a technology and the ambiguousness of research and practices around the safety of ultrasound, it becomes apparent that sonography as an occupation is not entirely autonomous or in control of who may access and use the technology of ultrasound. Based on Freidson's definition of a profession as autonomous and the hierarchical medical division of labour, it is apparent that sonography is a paramedical occupation and sonographers paraprofessionals. Throughout this thesis I will argue that the professionalism displayed by sonographers is based on the practices of impression management and emotional labour. As such, sonographers are faced with the issue of approaching routine obstetric ultrasound from either the perspective of a biomedical model or the perspective of a social experience. Such tension and oscillation between two quite opposite approaches to routine obstetric ultrasound examinations, and two vastly different communities of professionals and laypersons, results in the sonographer's dilemma.

Chapter 2:

The Sonographer's Dilemma

Introduction

> Patients who are parents-to-be often have different values and a different emphasis on what they want to see going into these diagnostic scans, and as sonographers it can be somewhat difficult for us to make the right balance of meeting their expectations of a bonding experience, and getting the images that we need, and making sure that we have covered everything that we need to do as professionals.
>
> - Judy

Judy highlights what we already know about obstetric ultrasound examinations: that parents and professionals often have quite different ideas and expectations about what should happen in the scan room and what the purpose and priority of the examinations are. There is often a communication disconnect as sonographers work to fulfil their medical obligations while parents focus on the exciting and highly emotional aspect of meeting their baby. When there is a conflict between the expectations of patients and what happens in the scan room the onus falls on the sonographer to pick up the pieces. It becomes the role of the sonographer to try to please the patient in addition to performing their medical duties.

The sonographer's dilemma arises when routine obstetric ultrasound examinations do not follow the cultural script of 'making sure the baby is OK'. This occurs when there is a medical issue with either the foetus or the mother, or when patient expectations inhibit the sonographer's ability to perform the examination. This chapter focuses on the two ends of the dilemma and frames the medicalisation of pregnancy as the result of a biomedical

model, and sets up the social meaning and management of ultrasounds as practices of 'doing family'. In utilising sonographers' engagement with impression management and practices of emotional labour, it becomes apparent that the sonographer's dilemma is expressed as a double bind. Double bind theory, developed by Bateson and colleagues (1956), provides a set of rules for thinking through sonographer-patient interactions in scenarios which result in either a medical diagnoses or a social breakdown in practices of doing family.

Medicalisation within the Biomedical Model

Edward van Teijlingen (2005) suggests that the medical model of pregnancy is used as a sociological tool, but also as a working model for health care providers. He reflects on the challenges this poses, as within academic and practical literature the use of the phrase 'medical model' is unclear, as is which level (practical, ideological, or analytical) the author is attempting to engage the concept (Ibid.). For this reason, I have chosen to base the medical component of this chapter on the biomedical model, which according to Cahill (2001) is "the *restorative* approach that seeks to identify specific disease processes and treat them" (emphasis in original). The biomedical model of pregnancy, therefore, relies on the pathologisation of pregnancy and seeks to portray pregnancy and birth as clinically significant events which need to be medically managed. Through the process of medicalisation more and more aspects of health are denoted as illnesses, and as such medicine is increasingly responsible for their control (Bushfield 2017, p. 2). The biomedical model of pregnancy relies on Teijlingen's ideological and analytical levels of interpretation rather than focusing on the practical application of medicine. "At the

ideological level, claims are made to defend or propagate certain practices and discredit others" (Teijlingen 2005). Within routine obstetric ultrasound, the ideological claims focus on the positivism of science, on ways of identifying and managing increasingly complex pathologies within the foetal body, and within the maternal body. Cahill (2001) links this to the obstetric profession's discovery of the foetus as a second patient and the increasing prioritisation of foetal rights over maternal rights. The analytical level suggested by Teijlingen (2005) is based on Weber's 'ideal type' which states that social phenomena are analysed only regarding their extremes, and that this cannot be done without bias or the abstraction born of interpretivism. The implication of Teijlingen's analytical level for the biomedical model of ultrasound is that testing is based on an averaged medical ideal of the normal and healthy foetus. Mitchell illustrates this clearly in her ethnography's of routine ultrasound in Montreal, Canada, where each and every measurement is compared with growth charts to verify whether the foetus measures up (2001, pp. 6-7). Such an ideal is not always present, and not always considered by patients as the priority. For example, Aida, who was thirty-one weeks pregnant at the time of her interview, was frustrated by the sonographer counting fingers and toes during her morphology scan as she said this would make no difference to her continuing the pregnancy nor would it change her birth plans. As such, patients' approaches in seeking to identify and manage pathology may be vastly different depending on their personal experiences of pregnancy and fertility (Mitchell 2001). In sonographers' experiences of routine obstetric ultrasound, the biomedical model represents their responsibility and obligation to utilise ultrasound as a tool for seeking to identify otherwise unknowable pathologies of the foetal and maternal body during pregnancy. The biomedical model discussed here is applied to one side of the balancing act

sonographers take part in with each scan they perform; the other side is determined by the social meanings and management practices of parents in their role as patients.

Doing Family

Within this chapter, I limit the social meanings and management of pregnancy to the practices of 'doing family' during ultrasound as conveyed by Rosalind Petchesky (1987), Charlotte Kroløkke (2011), Sophia Johnson (2014), and Julie Roberts and colleagues (2015). The social and medical idea of bonding, the creation and reinforcement of positive social connections between parents and the foetus, comes about as a result of what Kroløkke calls the "biotourist perspective" (2011, p. 16). The biotourist perspective frames ultrasound as a performative space within which expectant parents rehearse their new identities as mothers and fathers, and where the foetus becomes both a commodity and a baby with a sex and personality traits (Ibid). Sonographers facilitate the performative space of ultrasound as "gatekeepers to the womb" (Kroløkke 2011, p. 21). Sonographers are taught to prioritise the facts of ultrasound imaging over women's embodied experiences but, through clinical practice, they learn to facilitate patients' social expectations of meeting their baby (Ibid.). Roberts and colleagues (2015) utilise the performative practice of biotourism to explore the idea of ultrasound as a hybrid practice of medical and social meaning-making, and to shift the focus towards parents' use of ultrasound as a way of doing family. Doing family is the process of displaying verbal or visual markers of family practice, the "social actions that construct and affirm connections between family members" (Roberts et al. 2015, p. 2). Roberts and colleagues draw the notion of doing family from Morgan's work on family practices and Finch's work on the need to display

family practices for them to have social meaning. Therefore, the performative acts of doing family during routine obstetric ultrasound are a way of exploring imagined and anticipated relationships between parents and the foetus (Roberts et al. 2015, p. 4). The relationships signified during ultrasound may be between members of the family who are present, but also go beyond the scan room to include other members of the kin network (Mitchell 2001, p. 134, 136). As such, the sharing of ultrasound images can be understood as a signifier of doing family and as a way for the pregnant woman to signify her approaching motherhood (Roberts et al. 2015, p. 8). Therefore, the process of sharing the images rather than their content or legibility is what is important. As such, ultrasound and its resultant images become a resource for beginning to construct a social identity for the foetus and act as props for displaying good parenting (Ibid.).

The Sonographer's Dilemma

In proposing the sonographer's dilemma, the aim is not to problematise either the biomedical model or the medicalisation of pregnancy, or the social practices of doing family, but rather to explore the performative spaces which occur when the two collide upon the stage of routine obstetric ultrasound examinations. The role of sonographers in routine obstetric ultrasound as gatekeepers of medical and social meaning is, therefore, balancing technically complex medical examinations with the social expectations of patients. These balancing acts are best explained using double bind theory. Double bind theory, developed by Bateson and colleagues (1956), sought to explain the behavioural catalysts of schizophrenia within mother-child relationships. Double bind theory has since been used to help articulate the challenges of negotiating double-negatives or 'no-win' situations in many different types of relationships. The advantage of using double bind

theory to explore sonographers' labour relations is that it provides a framework for understanding the complexity of facilitating two at times irreconcilable outcomes.

Bateson and colleagues describe the ingredients of a double bind as (1956, pp. 253-254):

1. Two or more people; one of whom is the *subject*.
2. Repeat experience. Bateson and colleagues suggested that a double bind cannot be a singular event, but rather part of an ongoing relationship.
3. A Primary Negative Injunction: a function in which a particular action or outcome is punishable. Do X, or I will punish you. Do not do X, or I will punish you. Alternatively, it is some combination of the two.
4. A Secondary Injunction: a second imposition, usually non-verbal, which creates a further context for the Primary Negative Injunction and effectively means that the *subject* will always be in error of at least one of the injunctions.
5. A Tertiary Negative Injunction: a reason the *subject* cannot escape from the double bind, nor communicate about the existence of the conflict created by the double bind.
6. The internalisation of 3-5 results in the need for only one part of the bind to be apparent to activate the double bind.

The application of double bind theory to sonographers practising routine obstetric ultrasound relies on the understanding that:

> Pregnancy in western society, in fact, straddles the boundary between illness and health: the status ‘pregnant’ is unclear in this regard and women perceive that others are not sure whether to treat them as ill or well (Comaroff *in* Teijlingen 2005).

Sonographers contend with the idea of pregnancy as a contingent or tentative state.[14] Women who attend routine ultrasound examinations, particularly the nuchal translucency and morphology scans, are neither "ill or well" (Comaroff *in* Teijlingen 2005). Their pregnancy, for the duration of the scan, is considered to be in question as the viability of the foetus is assessed.[15] The possibility of a negative outcome, a non-viable foetus, means that sonographers must approach each scan firstly as a medical examination and then, only after confirming the health and 'normality' of the foetus, as a social experience (Mitchell 2001). However, patients often have different expectations and priorities during scans, and it is the conflict between sonographers' medical responsibilities and their social obligations which are explored in the following discussions.

The sonographer's dilemma has, therefore, emerged with the push for professionalisation of sonography as an occupation. The sonographer's dilemma is how to approach the balancing act of medical obligations set by their employer and the social expectations set by their patients. The dilemma is recurrent as specialist sonographers are faced with finding a new point of balance in up to sixteen scans a day, and general sonographers are faced with finding a new balance point each time they scan a pregnant patient. The emotional labour that goes into anticipating whether each scan will be a positive or negative experience is immense and will be discussed in a later section.

> I think, in terms of obstetrics, my greatest wish is for the patients to truly understand the depth and the concentration required to do that test and do it well, and I'm not sure that they do grasp that. I think it is seen as a bit of a spectator sport, and that makes me a bit sad because it frightens me. I'm

[14] See Rothman 1994.
[15] See Rapp 1993 and 1998.

> frightened I'll miss something because I'm distracted, and I'm frightened of being sued.
>
> - Karen

Karen's concern that patients don't "understand the depth and the concentration required to do that test" is linked directly to her fear of not being able to accurately perform her job. This forms one part of the sonographer's dilemma. The dilemma is framed by Bateson and colleagues' (1956) double bind theory. The sonographer's medical obligation forms the primary negative injunction, that is the sonographer is employed to perform medical diagnostic screening tests using the technology of ultrasound. Although Karen is afraid of being sued, she does not communicate this with her patients; instead she internalises the fear. This forms the tertiary negative injunction, which stops sonographers from talking with their employer or patients about the pressures they are under.

> I think the main focus needs to be promoted more, that ... it is a diagnostic study, and that we do try to get nice pictures, and we do try to make it a nice bonding experience for parents, but at the same time it is actually quite important that we can concentrate and can get pictures that we need … It's something that I think needs to be addressed to bring down the number of complaints that we get, because nine out of our ten complaints for ultrasound would be from pregnant patients, and a lot of it is they didn't feel like their pictures were pretty enough, or we didn't spend enough time talking to them about their pictures, or you know that we didn't do the 3D at the end of the scan because we didn't have time, or something ridiculous. But they just come up with stupid expectations, unrealistic expectations.
>
> - Amy

Amy's excerpt raises the other side of the sonographer's dilemma, that many sonographers do enjoy engaging with the patient and "do try to get nice pictures, and ... do try to make it a nice bonding experience for parents". That is, most sonographers want to facilitate an ultrasound experience which allows patients the

opportunity to ‘do family’ and to share in the excitement of a new baby. The complexity is that meeting the patient's expectations of a positive experience, of doing family, is not always possible. Patients’ expectations of a positive experience form the secondary injunction of the double bind, and the pressure is placed on sonographers by both their employer and the patient to be able to perform their job and fulfil their medical obligations and to meet patient's expectations. As Terry says, "somewhere around 98% of our babies are going to be perfectly normal", so this is often possible. However, sonographers are always aware of the possibility of abnormality. Mitchell (2001) explains this lingering uncertainty as sonographers search to "document foetal life" in the first moments of a scan. Once this is done and foetal life is confirmed, sonographers can breathe a metaphorical sigh of relief and move onto the rest of the scan (2001, p. 117). Amy emphasises that complaints from obstetric patients are often about social aspects of the scan; the readability of pictures or the time the sonographer spent facilitating a bonding experience, for example. Amy argues that patients have "stupid" or "unrealistic expectations" because the purpose of the scan is not communicated to them clearly enough. That is, patients prioritise the social aspect of the scans because they are not aware of the importance of the medical implications of the examination. The use of defensive language in identifying patients’ expectations highlights Amy's position within the double bind as a means of expressing the frustration of being caught between two conflicting demands (Bateson et al. 1956, p. 272). The responsibility for the conflict between the medical obligations and the patient's expectations can be put back onto the sonographer as seen in Stanley's passage below:

> When I started here, there was a department policy saying no more than four in the room. … People talk too much; they're distracting. So more than four is too many. But there was a complaint about five years ago. A lady brought with her ten people. Her sister-in-law had the day off work, and everything else, so she wrote a complaint. The [head of department's] way of resolving that complaint was to say that it's at the sonographer's discretion ... I could say to people no more than four, but then they'll write a complaint, and then it'll come back against me. So I sort of have no choice but to accept as many people as they want to bring. My hands are tied.
>
> - Stanley

Stanley's experience of feeling like his "hands are tied" is not unique. In essence it offers a very clear representation of the way the double bind works. That is, sonographers and employers are aware of the factors which make up the bind: the medical obligation, patient expectations, and often a sonographer desire to engage with the patient. However, because the punishment for failing to fulfil the primary injunction of the bind, (to accurately perform the diagnostic screening test) is being sued or losing their job, sonographers do have their hands tied and often must accept patients' social expectations of bringing in a crowd in order not to have failed the secondary injunction before even making it to the scan room and the medical examination. This example illustrates the way in which sonographers are already working within a double bind even before they begin the medical diagnostic screening test which forms the primary negative injunction.

This brings us to the idea of patient complaints more generally. Within the data not one sonographer mentioned a complaint about a medical incident relating to routine obstetric ultrasound. When I probed Benjamin, the manager of an ultrasound department, on this further his response was that in his twenty-one years of

experience he hadn't heard of any complaints for medical mismanagement or misdiagnoses during routine obstetric ultrasound.[16] However, there were on very rare occasions complaints against sonographers for misconduct and assault and, when complaints of that sort were made, they were usually justified.[17]

Conclusions

Within the context of the biomedical model, where pregnancy is pathologised and the purpose of medicalisation is the discovery and treatment of disease, sonographers are employed to perform medical screening tests. These screening tests, referred by physicians, performed by sonographers, and supervised by radiologists or obstetricians, position sonographers as paramedical workers and challenge sonographers' control of their work environment. As such, sonographers, in their acts of impression management and their performance of professionalism, locate themselves as paraprofessionals. In striving to meet the medical obligations of their role, sonographers are performing as professionals while lacking the autonomy critical to the separation of sonography from medicine as a profession (Freidson 1970). The medicalisation of pregnancy and the paraprofession of sonographers apparent in such a biomedical model is juxtaposed with the social meanings and management of pregnancy in the practices of doing family. Doing family is the practice of constructing and affirming connections between family members (Roberts et al. 2015, p. 2). The process of doing family in the context of routine obstetric ultrasound relies on the

[16]There are quite frequent complaints about medical mismanagement in regard to amniocentesis and CVS, however these procedures are carried out by an obstetrician or other specialist doctor. See Rothman (1994), and Rapp (1993; 1998).

[17]Complaints against sonographers in these instances are usually for indecent assault and make headlines, for example see Gardiner (2016).

sonographer as the facilitator of the emotionally charged act of 'meeting the baby'. Sonographers' engagement with performances of doing family relies on the practice of emotional labour. The emotional labour of doing family is often contraindicated by the need to utilise impression management practices when foetal demise or abnormality is found. These contradictory processes present sonographers with the dilemma of either meeting their medical obligations or fulfilling patients' expectations.

The sonographer's dilemma, as framed by Bateson and colleagues' (1956) double bind theory, offers a framework for perceiving the way sonographers manage the tasks of impression management on behalf of the employer and the processes of emotional labour in interacting with patients. The dilemma is particularly salient when either the primary negative injunction of performing a medical screening test or the secondary injunction of meeting patients' expectations, or both, is not possible. Therefore, double bind theory offers a way of exploring the differing levels of expectation placed on sonographers by their employer and the patients, and a way of opening up ideas of emotional labour as an unseen and unrecognised part of the role of the sonographer. Emotional labour, therefore, is a central task undertaken by sonographers in the course of their interactions with colleagues and patients. As such, emotional labour is present in the performance of all routine obstetric ultrasounds and not just those that are framed by double bind theory and the sonographer's dilemma. The utilisation of emotional labour is explored further in the following chapter, as the notion of expert images and the cyborg foetus are explored as products of routine obstetric ultrasound

Chapter 3:

The Processes and Products

of Routine Obstetric Ultrasound

Introduction

In discussing the products of routine obstetric ultrasound I mean products in the abstract sense, that each is produced by the sonographer through and by their interactions with others. These products are a state of mind, practiced by the sonographer as impression management and emotional labour. Impression management is the direct explicit task set by the employer, while emotional labour is the implicit internal processes of the sonographer in doing the job and coping with routine obstetric ultrasound as a performance. While expert images and objective self-fashioning talks to the readability of routine obstetric ultrasound images, the differences between 2D and 3D/4D imaging, patients and parents, ability to read these images, and the role of the sonographer in transforming the expert images into cultural objects, are used to create the cyborg foetus. The cyborg foetus invokes the idea of the sonographer acting for the foetus, speaking to the parents, etc. The cyborg foetus is what parents leave the routine obstetric ultrasound with, and what goes out into the world as a representation or stand in for the foetus as a person before birth. This connects to the idea of online birth and the ways in which the cyborg foetus makes it online, and the issues sonographers may have in dealing with this. This chapter also touches on the benefits to sonographers if they choose to engage in social media in a productive way.

Impression Management

The purpose of briefly touching on impression management is to make clear the distinction between impression management and emotional labour. Impression management is an explicitly defined continual process engaged in by all sonographers on behalf of their employer. Impression management is any behaviour enacted with the purpose of influencing the impressions formed of the individual or organisation by another person (Arndt & Bigelow 2000, p. 496). Emotional labour, on the other hand, is an implicit and assumed process engaged in by sonographers which relies on their ability to induce or suppress feelings in themselves and in the patient in order to produce the desired state of mind in the patient (Hochschild 1983, p. 7). Put simply, impression management focuses on controlling the other person's objective reaction to the service encounter while emotional labour focuses on controlling the subjective reactions of all participants in the service encounter.

The process of impression management can be best understood using a dramaturgical metaphor, where the actors are the sonographers and the patients, the setting is the hospital or clinic, and the performance is the interaction of the actors within the setting to create the service encounter (John 1996, p. 61, 64, 66). As such, there are theatrical structures in place which divide the setting and participants into front stage and back stage components. Front stage components include the performance created by the interaction of the sonographer and the patients, and the purpose for the encounter (Ibid., p. 66). Backstage components such as the sonographer's education and training, the sonographer's and the patients' cultural backgrounds, and both the sonographer's and patients' previous personal experiences impact on the management and interaction of the front stage performance while

remaining undisclosed (Ibid., pp. 66-67). Within the context of routine obstetric ultrasound, "defensive impression management serves to protect an actor from negative reactions to an event or maintain a desired reputation" (Arndt & Bigelow 2000, p. 504). Sonographers' use of impression management is intended to protect them as individuals and their employers as organisations from negative feedback or complaints should the scan reveal, or fail to reveal an abnormality (Ibid.). This process of defensive impression management is mediated by official and ad-hoc interactions between actors (Lewin & Reeves 2011). Official interactions are those set out by the employer and which have a script the actors follow, while the ad-hoc interactions are those which deviate from typical scripts and require the actors to improvise (Ibid.).

> I know the reputation that we've got, that we're horrible mean bitches who don't say anything, and I wanted to make a difference. I like talking to people. I like people having information, and I think if you don't like this job, you shouldn't be doing it. … I might do this fifteen times a day, but they're doing it once in their lifetime, and I can respect that. There are days that I have bad days and go, 'uh I don't feel like this' but, and I think my family gets the worst of me, and my patients get the best of me, 'cause I put on a sickly sweet act all day long and then I get home and let it go. But I think they're also paying. They are only pregnant once, and I like to be nice to people, and I want our reputation to change… I find communication and empathy and sympathy are incredibly important in this job, but I know many of my colleagues don't, and it bothers me.
>
> - Katie

Katie's interview excerpt is particularly interesting as she is focused on impression management and wants to improve the overall reputation of the industry she works in. The practices she prioritises are effective communication with the patient, which she feels is not always understood as important by her colleagues, and the ability to use emotional labour to stay in control of the situations. In terms of communication practices, employers often have and enforce what sonographers cannot say rather than focusing on aiding them to

develop productive scripts for a variety of situations. This is where the difference between impression management and emotional labour is most apparent, as impression management relies on the official scripting of the employer while emotional labour utilises the sonographer's own ad-hoc performances. In saying "I think my family gets the worst of me, and my patients get the best of me, 'cause I put on a sickly sweet act all day long and then I get home and let it go", Katie emphasises the amount of energy that goes into emotional labour and recognises that although this is a productive practice in the workplace, it may have negative impacts in her personal life.

Emotional Labour

Sonographers, in their attempts to please their employer and their patients as represented by the sonographer's dilemma and by Bateson and colleagues' (1956) double bind theory, engage in what Arlie Hochschild calls 'emotional labour'. Emotional labour "... requires one to induce or suppress feeling in order to sustain the outward countenance that produces the proper state of mind in others" (Hochschild 1983, p. 7). Emotional labour is the requirement to 'do acting' as part of your job (Ibid., p. 189). As in Bateson and colleagues' (1956) double bind theory and the sonographer's dilemma more generally, emotional labour forms part of the secondary injunction; a nonverbal cue or presumption which adds the context of 'keep the patient happy' to the primary negative injunction of 'performing the diagnostic screening test'. The process of 'doing acting', according to Hochschild, can be separated into surface acting and deep acting (1983). Surface acting consists of disguising a feeling or pretending to have a feeling; although useful, surface acting is often easily noticed by the audience it is directed at (Ibid., p. 33). Deep acting is more complex and more genuine; deep acting is when the "display [of feeling] is a natural result of working on

feeling" (Ibid., p. 35). That is, the actor experienced the feeling rather than pretending to. Hochschild suggests there are two approaches to deep acting: one where the feeling is directly incited and the other where the feeling is created using imagination (Ibid., p. 38). These two methods of deep acting can be further simplified as being able to feel the appropriate emotion by either comparing the experience to your own experiences or being able to empathise using imagination.[18]

Hochschild very briefly discusses the way doctors engage in emotional labour, reflecting that, "it is … the doctor's job to present alarming information to the patient and to help the patient manage feelings about that" (Ibid., p. 151). This quote is the premise on which the following discussion is based. Sonographers, as part of their job, are engaged in helping patients manage their feelings about routine obstetric ultrasound and sonographers are also managing their own feelings in the process. Emotional labour, therefore, is an integral part of routine obstetric ultrasound as sonographers by the very nature of their job are required to do acting in order to interact with the patients.

> I think an interesting part of it is ... how it affects us mentally, how it affects sonographers mentally. ... I can go from bad baby ... sombre doom and gloom and my next patient will be 'Hey I've brought Mum and Dad to see the baby!' and I have to be happy.
>
> I work in a good team, which is good. And we sound off on each other frequently. We get it, but then nobody else seems to, that's OK. You can only do what you can do.
>
> - Deanna

[18] See Ashforth & Humphrey 1993; Morris & Feldman 1996 and 1997.

Deanna was one of only a few sonographers who mentioned their colleagues as a source of support. Gray (2009) indicates that in workplaces where staff are encouraged to provide emotional labour and support to both colleagues and patients there is a decreased risk of staff experiencing barriers to professionalism, such as gender and inter-professional differences across a multidisciplinary team of colleagues. In stating that the benefits of emotional labour can be greatly therapeutic, Gray goes on explore the idea of "emotional routines" which are practices of engagement and showing the patient that you care (Ibid.).

Deanna, like many of the sonographers interviewed, is consciously aware of the role emotional labour plays in her daily work. The switch between "sombre doom and gloom" and "happy" can be understood at varying levels. If the sonographer is well-supported and is confident in their emotional displays, both surface and deep acting may become generalised and a routine part of the work rather than a source of stress (Grandey 2000). However, for sonographers who lack such a support network the emotional yo-yoing undertaken over the course of the day can become exhausting mentally as well as physically, and they can continue to feel these effects even after they have left work. Karen discussed this in her interview excerpt:

> I think ultrasound's an interesting profession, Sarah, and I'm not sure ... what makes a good sonographer …You're sitting in the room with the patient; you're looking at sometimes some really devastating things, the patient often knows that you know, it's just a real challenging situation to be in if you have to put that news there to the patient …I think when you are younger you have it, in health you just ... learn very quickly to put the wall up, make sure you stay on your side of it and keep them [the patient] on their side of it. But over time something changes, and ... it starts to mingle, they start to get to you. Patients get to you, and you end up sort of worried for them and thinking about 'I wonder how they got on' ... it's a difficult thing; I'm guessing it's not just sonographers, it's probably all health professionals that start to worry about their patients.
>
> - Karen

Karen, by saying "I'm not sure ... what makes a good sonographer", is questioning whether she is a good sonographer. Sandi Mann (2005), in her article 'A Health-care Model of Emotional Labour', suggests that if the feeling of particular emotions is linked in the mind of the sonographer to doing a good job, then sonographers who fail to feel those emotions or need to fake those emotions through acts of emotional labour may feel unsure as to whether they are performing to a high enough standard (Ibid.). Karen emphasises this point in her description of "the wall" which she used to have between herself and patients. I propose that "the wall" was Karen's filter between herself and the patients; it allowed her to choose which of the patient's emotions to react to as well as allowing herself the ability to project the appropriate emotions back to the patient. Karen, in letting patients get to her, is experiencing some of the negative effects of emotional labour; negative effects include work-related stress, poor self-esteem, depression, and alienation (Ibid.). Mann (2005) goes on to identify that emotional dissonance, of which these negative effects are attributes, plays a major role in the sonographer's perception of job satisfaction and overall levels of stress.

The implications of emotional labour and its effects on personal stress are compounded when sonographers experience personal life events which make the harmony of the desired and the felt emotions impossible (Hochschild 1983). Emotional dissonance was, therefore, most apparent when sonographers spoke of their own experiences of infertility. The experience of personal infertility created situations in which sonographers were actively needing to suppress their own emotions and perform deep acting in order to ensure the patient had the best possible experience and to maintain their composure and professionalism.

> There are lots of people who have miscarriages, who have deaths, who have stillborns, who have all sorts of things that they then have to face when they are dealing with patients who are ... having these things as well. ... it's quite a difficult and confronting part of the proceedings ... especially when you have patients who, of course, who are very overwrought, and don't think that you have any idea of what they are going through and make sure that they tell you that, and of course that's something that you have decide whether you want to share with them, whether it's appropriate to share with them.
>
> - Hazel

Hazel raises the question of how much to share with patients. This is contentious in that the sonographer may overwhelm both themselves and the patient, but it also has the potential to reassure the patient that they are not alone in their experience. In borrowing “the wall” from Karen, it is possible to think through emotional labour as a decision on the part of the sonographer as to how much they choose to feel genuinely and how much they decide to suppress or fake in the context of each examination. That is, whether the sonographer decides to stay behind the wall by suppressing their own feelings and putting on an emotional display for the patient, or decides to remove the wall and engage directly with the patients at the level of authentic, genuine, and often very intense emotional work as they share their own

personal experiences (Hochschild 1983; Gray 2009; Sawbridge & Hewison 2013). Both approaches have potential benefits and consequences for the sonographer and the patient, and it comes down to a decision on the sonographer's part as to whether they feel able to engage the patient without compromising the welfare of the people involved. This decision will often depend on whether the sonographer feels they have support from colleagues and superiors (Grandey 2000). Hazel discusses situations where it is the sonographer's decision whether or not to engage the patient, while in the excerpt below Hannah highlights the implications when engagement is thrust upon the sonographer by the patient's actions:

> I think my long battle with infertility influenced the way that I work ... It was very difficult for me to work full-time, nine hours a day, in a busy obstetric clinic where every patient who I did an eighteen to twenty-week scan on, they throw out the hook to you. And they say 'Oh, do you have children?'. And because it was such a struggle for me to achieve a pregnancy, sometimes I would brush it off, and sometimes I couldn't cope with the question, and I'd say 'no'. And I'd be a little more curt than I'd normally be with them. So, I guess watching my own observation of the days I couldn't handle it very well; I was disappointed that I couldn't be bright and chirpy with the patients in that answer. The rest of the scan I was my usual self.
>
> - Hannah

The "hook" Hannah discusses indicates that it wasn't her choice whether or not to engage with patients. Even though she anticipated being asked "do you have children?", Hannah would have to check her own reactions and consciously work on acting during the scan. The self-reflexivity and professionalism Hannah exemplifies in her ability to maintain composure and her usual emotional routine throughout the rest of the examination is an example of the way different aspects of emotional labour can become generalised and routine, but also the ways in which

disruptions to sonographer's personal lives can have unexpected implications for their interpersonal and intrapersonal interactions (Grandey 2000; Gray 2009; Mann 2005; Smith 1991).

Expert Images and Objective Self-Fashioning

> The perception of my patients [is] that they're just here for pretty pictures. I sometimes feel that that puts a lot of pressure on us to do that... We've got pictures up on the wall out there which, personally, I don't think is a great idea because they all come in, see them, and think that's what they're going to get today even though they might be here for a twelve week scan and those pictures are all twenty-eight, twenty-nine, thirty weeks. You can tell, when you can't do a 3D picture, you can tell they're disappointed. And every now and then you'll get someone who'll ring up later to complain that they didn't get pictures.
>
> - Keira

The word 'pretty', when used by sonographers to refer to images generated through ultrasound, was inevitably a derogatory term as with "pretty pictures" when used by Keira, an O&G ultrasound specialist. Sonographers who brought up the phrase "pretty pictures" were appropriating the phrase from its usual positive cultural connotation to instead express frustration and disparagement at the widespread social meanings of their work outside their intended medical context. "Pretty pictures" are images which hold social but not medical value. Sonographers value medical images as "expert images" while "pretty pictures" are what mothers expect to take away from their examinations.

Joseph Dumit's (1999, 2012) work on expert images and objective self-fashioning practices highlights the way images are defined as needing expert interpretation, as well as how these images are appropriated into our understandings of self and identity. As a technology,

ultrasound takes the complex principles of mathematics and physics in conjunction with the expert medical training of a sonographer and condenses these relationships into supposedly objective images. In his article 'Objective Brains, Prejudicial Images' Dumit suggests "the persuasiveness of these [medical] images might be operating on levels supplementary to the logic of expert argumentation" (1999, p. 173). That is, patients can and do read ultrasound images in ways that are not based on their medical context. Dumit positions these supposedly objective medical images as "a special kind of photograph that all could see but only some could read" (Ibid., p. 178) and in doing so creates the category of expert images. "Expert images are objects produced with mechanical assistance that *require* help in interpreting even though they may appear legible to a layperson" (Ibid., p. 174, emphasis in original). Following Dumit's logic, if ultrasound images of the foetus cannot be simply comprehended even by sonographers, how is it that ultrasound images of foetuses have become familiar enough to appear in popular culture (Ibid., p. 176)? Dumit suggests that the answer can be derived from the nature of expert images as doubly coded; they are both corroborative evidence and cultural objects (Dumit 1999, p. 176). The double coding of expert images means that sonographers interact with ultrasound images as corroborative evidence which is secondary to their own understanding and reading of the real-time scans. Such corroborative evidence then becomes part of the sonographers' report, and both the written report and images are used concurrently by the referring physician. When ultrasound images are read by patients, however, they become cultural objects and thus take on the role of primary rather than secondary evidence.

Figure 2: Photo taken in the waiting room at the Private Obstetrics and Gynaecology Ultrasound Clinic in Western Sydney where Keira works.

In describing the interchangeable subjective and objective positioning of the expert and the image, Dumit (1999) calls on Greiman and Courts' *planar semiotics*, i.e. "the ways in which relative to a given culture, certain signs [are judged] to be 'more real' than others" (pp. 186-187). Dumit argues that, although the image is to be taken as secondary evidence, the very fact that it can be read without an expert nullifies the expert as the primary source and therefore raises the value of the image to evidence which speaks for itself. As such, the prioritisation of visual knowledge over phenomenological knowledge is a reflection of the medicalisation of pregnancy, and the uptake of ultrasound images of the foetus representing or being the identity of the baby. During routine obstetric ultrasound the knowledge of pregnancy is read from the woman's body by an expert using a machine, rather than judged introspectively by her own experience. Such a transition away from a phenomenological understanding of the body must, therefore, change the way we approach information about the body as part of identity work.

Dumit, in *A Digital Image of the Category of Person* (2012), uses the concept of objective self-fashioning to illustrate identity work by arguing that people have come to recognise medical images as themselves, as not only part of their identity but as representing their identity. Objective self-fashioning is characterised by how we, as individuals, take the facts that we have about ourselves and incorporate them into our lives and identities (Dumit 2012, p. 367). In the case of routine obstetric ultrasound, it is not facts about ourselves but facts about the other-in-ourselves. In utilising Dumit's theory of objective self-fashioning, pregnancy as viewed through routine obstetric ultrasound reconfigures the maternal category of person to include an additional self, the foetus. The foetus, while contained in the biological body of the woman, is separate from the self of the woman as referenced by

the objective ultrasound images of the foetus which show no trace of the woman (Martin 2001). The images of routine obstetric ultrasound are recognised by patients—parents to be—as representing the identity of 'their baby' and as such creating the baby's identity as separate from and related to themselves through the practice of doing family. More precisely, the ultrasound images become the baby for the remainder of the pregnancy and by engaging with these images parents are both constructing and affirming the identity of the baby and rehearsing its role within the family. By actively engaging with ultrasound images during the scan and afterwards, parents are actively doing family (Roberts et al. 2015, p. 2). There are many ways of doing family with the cyborg foetus and Johnson (2014) suggests that, when images of the cyborg foetus are posted online to apps or social networking sites, this act of doing family comes to signify "online birth" and the beginnings of the social construction of personhood. The concept of online birth facilitated by ultrasound images would be categorised by Dumit as a "virtual community of objective self-fashioning" (2012, p. 372). Ultrasound images form a significant part of the way virtual communities around pregnancy and birth operate, particularly on social networking sites and through online mothers' groups and forums. It is virtual communities and their continual feedback from laypersons to experts and back to laypersons which create circuits of information distribution and understanding (Dumit 2012, p. 375). By conceiving of information distribution and understanding as cyclical, it becomes increasingly important to further educate sonographers, as well as patients, about the expert nature of ultrasound images.

> When I take a photo of myself, I don't expect it to look like Megan Gale, nor should you [the mother] expect the image [of the foetus] that I give you to look like the one that has been carefully curated from thousands of images in a magazine. … It's exactly the same thing. … I think the expectation is high, and one of the other ... confounding issues is that the body habitus[19] is increasing as well … Everything is further away, and the image will be blurrier 'cause the ultrasound has been more attenuated by the travelling through more tissue. So the quality of your image will be worse, and that's a very hard thing to bring up.
>
> - Gina

Gina, a lecturer in ultrasound physics as well as a practising sonographer, addresses the idea of expert images when teaching but also when speaking with patients. Gina focuses on the expert and curated nature of the pictures of foetuses that are displayed, likening them to "images in a magazine". The social construction of images as in magazines and online speaks to Dumit's notion of virtual communities of objective self-fashioning and invokes ideas of expert images which both can and cannot be read by patients (Dumit 1999, 2004, p. 372). However, it also readdresses the idea of ultrasound images as cultural objects that come to signify or to stand in place of an identity for the foetus.

The Cyborg Fetus

The cyborg foetus is both a product of and what connects the medicalisation of pregnancy and the social meanings of pregnancy in the context of routine obstetric ultrasound. The

[19] The use of the phrase "body habitus" by sonographers during interviews, as shown by Gina and Jean, speaks to the medical lexicon which aims to be politically correct. Having an increased "body habitus" can more colloquially be understood as a greater amount of fat through which the sound waves have to travel. In overweight or obese patients the density of abdominal fat puts pressure on sonographers to produce accurate medical images, as well as requiring that they engage in additional, more complex layers of social interaction with patients as they need to justify why they may be struggling to do their job and to get "pretty pictures".

cyborg foetus represents the imagined baby created during the merging of technology and the body, and is facilitated by sonographers as "gatekeepers to the womb" (Kroløkke 2011, p. 21). The cyborg foetus is defined as "the cognitive and sensual apprehension of the foetus as electronically mediated by a variety of technologies" (Mitchell & Georges 1998, p. 106). The cyborg foetus of ultrasound is almost always viewed in isolation of the pregnant mother; the images on the ultrasound screen show no trace of her body interior and only when medically necessary show the placenta and umbilical cord (Mitchell & Georges 2015; Martin 2001). Mitchell and Georges (1998) challenge this idea by examining the embodied and social construction of woman, machine, and sonographer as they come together to create ultrasound images (p. 107).

> By nineteen weeks they look a bit like Gollum from Lord of the Rings, but you can actually see that it's a baby ... if it's not even looking at us, we can't actually see 3D-4D. So 3D-4D doesn't actually give you a good picture regardless. You've got to kind of work at it. But I do use it towards the end of the pregnancy scan just to sort of give them an idea of 'this is what it looks like'.
>
> - Jean

Jean invokes cultural representations of the foetus, likening the gaunt 3D features seen at nineteen weeks to Gollum. In doing so, she also produces the cyborg foetus. By creating a cultural link using visual similarity between a recognisable fictional character and the images on screen, Jean brings the foetus out of the medical context and into a social one. Through this process, when Jean says "you've got to kind of work at it" she is referring to the cohesive and collective efforts of herself as a sonographer, the ultrasound machine she uses to create the images, and the woman's body and actions in producing the cyborg foetus. The embodied work between the sonographer and patient described by Mitchell and

Georges (1998) was further described eloquently by Diane: “I'll get them to roll over, I'll send them out to the toilet, if you just can't get it you just can't get it, but that upsets a lot of patients”.

Thus the cyborg foetus, with help from the sonographer, transforms from the medical images of ultrasound into the social subject, the baby who is already, always enmeshed in the heterosexual practices of doing family (Kroløkke 2011, p. 25). The cyborg foetus has always existed in parallel with obstetric ultrasound, however in the digital age of Web 2.0 the cyborg foetus is being broadcast further than ever before. The process of monitoring and sharing pregnancy progress and foetal development in apps and social media through smartphones as performative devices contributes to the production of the cyborg foetus. It is becoming increasingly common to see ultrasound images as part of online profiles, either the mothers' own profile or new profiles set up for the child-to-be (Johnson 2014, p. 338). The constitution of the foetus as an online subject separate from the mother contributes to what Johnson calls an "online birth" (Ibid.). Online birth, like the cyborg foetus, is facilitated by the performance of engaged others. As such, obstetric ultrasound is a performative device that prompts women to survey their body interior, to prioritise visual knowledge over phenomenological knowledge, and provokes them to produce and engage with the cyborg foetus as a person separate from themselves. Sonographers, as gatekeepers and mediators of this technology, are the ones who must negotiate their role within the medical and social performances of the patient within the scan room.

Social Media

Social media has opened up a new way of performing digital identities, as well as informing our physical realities (Johnson 2014). When a patient wants to snap a photo during their ultrasound, tweets, posts to Facebook, or blogs about the experience during or afterwards, they are actively performing their subjectivity and they are also creating an identity for the cyborg foetus in the digital world (Johnson 2014, p. 338). This performance may also include the sonographer, whether or not the sonographer intended or consented to the exposure. The increasing use of smartphones in the scan room during examinations means sonographers need to be mindful of their acts of professionalism in the scan room, including what they say and how they choose to or choose not to engage with social media.

Mothers are actively recording and performing their pregnancy experiences through apps and social media as a means of creating themselves as "digitally engaged" maternal subjects, and as a way of promoting the gendered and personified identity of their baby (Ibid.). With the understanding of apps and social media on smartphones as performative devices and mothers as engaged digital subjects, it is easier to approach the feelings sonographers may have about the role of these new technologies of the self in the scan room. As this was an emergent topic within interviews there are only two critical perspectives: one against the use of social media and one for the use of social media. Both sonographers described different levels of personal engagement with social media. Sonographers' status as "digital natives" or "digital immigrants" may be seen as a deciding factor in whether they believe it to be a frustration, or a useful and productive part of examinations, or even as a way to engage with patients beyond the scan room (Wells et al. 2015, p. 1017).

> I find the use of social media really confronting. … I don't do social media, so I'm pretty useless in that respect ... I've had patients want to Snapchat their ultrasound examination, and … that's going one step ... beyond for me.
>
> … there's something called [City] Mums which I haven't looked at but I know a lot of our patients have, and they blog, and they talk about … how to get a free ultrasound, how to get your ultrasound at Foetal Medicine and it's … to feign a medical condition so that you can get an ultrasound done and it doesn't cost you anything. … People put their ultrasound photos and stuff up as well, so I find … it's a bit weird.
>
> - Deanna

Deanna identifies herself as a "digital immigrant", she is aware of but chooses not to engage with social media at all (Wells et al. 2015). In identifying her discomfort with patients wanting to Snapchat their examination, it is important to provide additional context. Deanna works in a specialist foetal medicine unit, and this means that the majority of the patients she scans have been referred from other practices for follow up on suspected foetal abnormalities or maternal health issues. Sonographers in general practice have concerns about patients' reactions to bad news and patients' understanding of what happens next, and Deanna's concerns are understandably heightened as there is a greater chance of her findings being less than positive. According to Lalor and Begley (2006), the rate of adverse findings is approximately 2% at the time of the morphology scan. That is, on average, one in fifty pregnant women a sonographer scans will have a foetus with adverse findings. Among specialist sonographers in this study who gave the number of scans performed per day, the average was 10. Therefore, it is statistically likely that sonographers will have an average of one case per week with adverse findings. However, most specialist sonographers work in tertiary referral centres which means that they are scanning high-risk patients or patients who have been referred for a second opinion. I argue that this must increase the ratio of adverse findings which specialist sonographers will

encounter. Alternatively, general sonographers may encounter adverse finding much more rarely, as obstetrics may make up only a small percentage of their workload.

Deanna's experience can also be seen to reflect an overarching medical standpoint that professionals should not engage with social media. The majority of existing literature emphasises medical professionals' 'personal' engagement and storytelling practices on social media. Deva Wells and colleagues (2015) and Danielle Ofri (2015) highlight the incumbent nature of social media and the implementation of new guidelines and consequences for practitioners' use of social media. Ofri (2015) in particular focuses on the human need to tell stories and the catharsis which may be provided by this process, however she too cautions the sharing of such stories instead suggesting that if they do not honour the patient they should not be shared. The scare tactic of this literature includes case studies of the differing ways in which professionals and medical students have breached their industry codes of confidentiality by sharing vignettes of their encounters with patients. These case studies are meant to highlight breaches of industry codes and to discourage online storytelling in public forums. More specifically, the approach to social media adopted by Wells and Ofri suggests that any engagement with social media in relation to their work is unprofessional. Deanna, like many other medical professionals as a "digital immigrant", appears to have interpreted this as a matter-of-fact; she feels that as a sonographer she should not engage with social media at all, on either a personal or professional basis (Wells et al. 2015, p. 1017). Because social media is a space outside the sphere of Deanna's knowledge, she finds it is easier to avoid social media entirely rather than choosing how to engage in positive and productive ways. The approaches suggested by Deva Wells and colleagues (2015) and Danielle Ofri (2015) encompass professional and

student approaches to social media and recounted the experiences of intern physicians. Such a perspective, however, fails recognise that patients also use social media as a storytelling medium.

> Maybe a little bit actually of being on the other side. Being a patient myself, having experienced some of the things that have happened in my profession, has definitely changed me as a sonographer. Having children has definitely made a huge difference. Going through pregnancy, going through labour and birth, going through a miscarriage, going through a possible ectopic [pregnancy], all of that has shaped who I am professionally as well. ...and also as weird as it sounds, being online, being in groups of mums and hearing the other side of the story of how they were treated in an ultrasound room. What people like to be said to them, what they don't like to be said to them. Referring to something as a baby not a foetus and all that sort of garbage I've picked up along the way probably from keeping my eye in on the other side. Being in online forums and that sort of stuff, seeing what the perspectives like on the other side.
>
> - Katie

Katie's experience of social media as a parent and as a "digital native" makes her perspective quite different to Deanna's. As a parent she utilises online communities, mothers' groups, and forum discussions; as a sonographer, Katie uses these online resources to supplement her medical knowledge with women's experiences. This choice to engage with social media as a productive tool and as a source of information is beneficial to Katie as it allows her to improve her knowledge of interactions with patients. It is also beneficial to patients, as sonographers who engage with social media as a learning tool are then better able to understand and meet the expectations of their patients.

Therefore, teaching sonographers how to approach and engage social media productively might allow practitioners to better engage with their patients and work to develop greater empathy towards patients and other practitioners. The existing literature on patient experiences of social media focuses primarily on chronic illness and on sharing of coping

mechanisms and recommendations (See Fox 2011; Greene et al. 2011; Merolli et al. 2013). As such, the literature on patient use of social media does not encompass the entirety of what is happening in pregnancy discourse online. Sophia Johnson (2014) begins to explore the concepts of the maternal subject as "expert patient" in her article on the way women performatively engage with apps and social media as a way of monitoring and regulating the pregnant self. However, the focus of the article is the performative nature of technologies of the self and women's engagement with apps, not their interaction with other people through performative devices.

Conclusions

Each process and product of routine obstetric ultrasound is, therefore, contingent upon the sonographer's medical expertise, and also integral to the sonographer's ability to perform their medical and social roles. Impression management and emotional labour constitute the spectrum of processes along which some tasks and expectations are explicit while others are implicit. In enacting both impression management and emotional labour practices, sonographers are acting upon, and with the perceived instructions and intentions of their employer, the patient, and their personal histories. The implications of both explicit and implicit expectations are that such demands create additional strain upon sonographers to live up to an ideal which is built on logical and methodological understandings of medicine, rather than upon social and cultural representations of personhood. Emotional labour, in particular, is often unrecognised by employers and often is what causes sonographers to stress about their work. Emotional labour is inherent in all service occupations. However, sonographers are contending with more than just whether or not the patient is happy.

Sonographers are contending with whether the person they have invoked through ultrasound meets the cultural and personal expectations of the patients as parents. To hold such an ambiguous position, where the sonographer, the facilitator of performative personhood, does not know whether the fetus as the second patient is alive, or whether it will meet the expectations of its parents must be fraught with anxiety and insecurity.

These processes, then meet in the products of routine obstetric ultrasound. Here, expert images are played with by patients as "pretty pictures" and the boundaries between medical and social meanings are erased, as the boundaries between the woman and the foetus are erased by ultrasound. The sonographer must contend with making medical meaning from the images and measurements they take, while also facilitating the social performance of producing a baby from the grainy pictures of foetal anatomy. Dumit's extrapolation from expert images was virtual communities who identify themselves as, and through, such expert images. Therefore, objective self-fashioning is done not by the self, but done for the foetus as the other, by the sonographer and parents. Therefore, the cyborg fetus, comes about as a being, as a product and a process, of routine obstetric ultrasound and as the mediator between the medical and social understanding of pregnancy. The cyborg foetus is born of the collaboration between the sonographer and its' parents as they perform personhood and create a social identity for a body which does not yet have a self.

Sonographers interactions with social media functions as a product in a slightly different way. Whether sonographers choose to engage with social media actively or not, their actions and images, the "pretty pictures" they give to parents, potentially end up online. Should sonographers want to engage with social media, there needs to be an understanding

of what constitutes appropriate behaviours and contexts for sharing their experiences, and for communicating with patients about the purpose of ultrasound, and the challenges posed by the social interactions.

Chapter 4:

The Bonding Continuum

Introduction

> Well it's, it really, really is a medical test, and it needs to be treated as such. I can't think of one surgeon on the planet who would say come along and watch me whip out grandma's gallbladder, it just doesn't happen. But for some reason this highly technical, difficult study is treated like a peep show, and it robs you of your ability to concentrate … You become frightened that you're going to be sued if you miss something … When we start to talk about using ultrasound for families to bond with the baby, I think maybe we should separate that off into you know, one of those entertainment-type scans, which does not involve any medical diagnoses at all. I just think it's a very challenging test to do, and I really don't understand why people would prefer to have a touchy-feely experience than know that something's been done in a very precise manner and very accurately.
>
> - Karen

In these few words Karen identifies the main challenges and contentious issues that sonographers and families experience in relation to bonding through ultrasound. These include the social management practices of "doing family" (Petchesky 1987; Kroløkke 2011; Johnson 2014; Roberts et al. 2015); the use and interpretation of medical "expert images" (Dumit 1999, 2012); and the practices of impression management (Arndt & Bigelow 2000; Lewin & Reeves 2011) and emotional labour (Hochschild 1983) of sonographers as they navigate varied patient expectations and experiences during the course of a day. This chapter focuses on sonographers and their feelings and perspectives on the use and promotion of routine ultrasound as a bonding experience, and the emotional labour they perform in balancing their medical obligations with patients' social

expectations, particularly of doing family. By placing the emphasis on sonographers' personal experiences of bonding in ultrasound imaging, this chapter explores the practical workings of the profession rather than the policy and guidelines. The initial reactions sonographers had to questions on this topic ranged from silence or laughter, to quips about the heaviness and controversy of the question. These reactions made it apparent that the emphasis on the social value of imaging was a critical issue for sonographers. The sonographers had a continuum of attitudes towards the practice, from arguing it should be strictly medical to strongly supporting the social function, as illustrated in Figure 3. However, as close analysis of their interviews shows, each sonographer's position was not fixed along this continuum; they could and did change their positions based on the flows of their recent experiences and the way that I put questions to them.

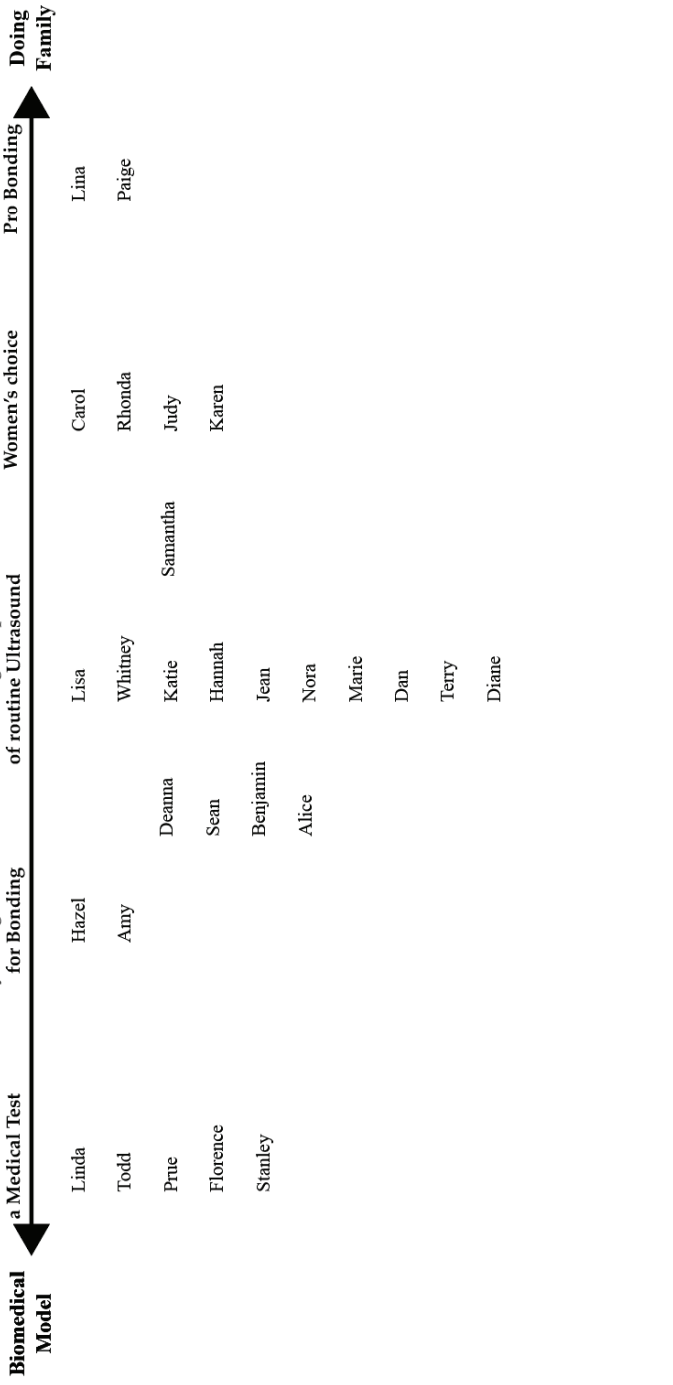

Figure 3: The Bonding Continuum

Ultrasound is a Medical Test

Sonographers at this point on the continuum expressed concern and frustration about the use or promotion of ultrasound for bonding purposes. They often felt ambivalent and anxious about the fact that they were pressured to provide a bonding experience when they felt the exclusive priority was the medical screening.[20] Their experiences ranged from mild annoyance at being pressured into partaking in something they didn't believe was necessary: "I don't think they should need ultrasound to bond with their baby" (Florence), to the other extreme, where they were afraid of being sued or held liable should they fail to identify a medical condition or malformation during the scan. These perspectives highlight the challenge of managing patient expectations and fulfilling their professional role as a sonographer in a work environment which imposes double bind and takes emotional labour for granted as an invisible and unconditional part of the role.

> I see obstetrical ultrasound as a medical and diagnostic test, that's from my training, I'm very old school about that because of how long ago I did train. Back in those days ... It was just treated as a medical test, so that's how I still tend to see it to a great degree, I understand that they want to see their baby and all that but, I think a lot of people don't realise how important it is, and that it's not just an entertainment or bonding experience. So, you know, I don't know, I don't think they should need ultrasound to bond with their baby, personally, there again I'm probably speaking to my age and number of years doing this.
>
> - Florence

Florence highlights the perspective shift which is apparent for sonographers depending on when, and where they did their training. Florence has thirty-one years experience, and trained in Canada. As such, Florences' experience were entirely different from the other

[20] For discussions of ultrasound as an obstetric screening tool see Luck (1992), Saari-Kemppainen et al. (1990), Ewigman et al. (1993) and Neilson (1998).

sonographers interviewed, but also incredibly similar as day to day, she works in the same clinic environment and faces the same challenges. Linda exemplifies the opposite experience, she is currently a student sonographer in Tasmania.

> Yeah I think it's not a good idea ... people come in with an expectation that everything's going to be ok, when in-fact ... a second trimester scan has over like fifty things you have to check and so much that can go wrong so I think if you amp it up to be this thing that is going to be a pretty scan where you get to see your baby then that makes it a lot harder when something is wrong, so I think its a bad idea, I think it should be encouraged as a medical test not a bonding experience.
>
> - Linda

Linda's perspective illustrates that the challenges sonographers face in maintaining the medical context of routine obstetric ultrasound is an ongoing concern. Prue's reaction to bonding is less extreme, and she begins to illustrate the movement sonographers experience within the continuum.

> I'm quite ambivalent about that… I don't know how to put it into words. From a sonographers point of view I believe it's a very high level scientific test and as a sonographer I feel pressured to provide a bonding experience and I don't enjoy that aspect of it.
>
> - Prue

Prue, in identifying her discomfort at being "pressured to provide a bonding experience," signals her position within the double bind. The pressure Prue is describing is the result of the contradiction between the secondary injunction of keeping the patient happy, and her prioritisation of the primary negative injunction of performing a medical screening test (Bateson et al. 1970).

Psychological Uses for Bonding

The primary reasons for identifying a psychological use for bonding was the presence or diagnosis of anxiety or depression. The conditional nature of a psychological use of ultrasound for bonding was linked to a woman's personal history before pregnancy, as well as to previous negative pregnancy experiences. A woman who was known to have experienced recurrent miscarriage or malformation was more likely to be referred for an ultrasound with the specific aim of reassuring her and providing her with a bonding experience. In these instances, the sonographer perceived ultrasound as a tool to reassure the woman, and attempting to facilitate bonding was seen as an expected, prioritised part of the scan. That is, practices of impression management were made possible as the backstage of the woman's previous experiences was brought to the front stage of the ultrasound performance. Resultantly, bonding focused scans create a different dynamic in the way sonographers engage with emotional labour, as they may choose to spend more time on deep acting, or not need to act at all, as they work with the woman to create reassurance.

> It's hard for people to understand because I s'pose previously, if you had a scan, it wasn't very involved, and you didn't get to watch it. But now everyone thinks that it's their God-given right to be involved and see everything and know everything. It's hard.
>
> But I think at the same time, ...at the moment, postnatal depression is really, really prevalent, and if the scan offers them a little bit more bonding and coming to terms with everything and accepting what's going on, or, you know, whatever, prepping themselves. I think it's good for them. It's not the most important part of the scan though.
>
> - Amy

As can be seen in Amy's interview excerpt, a sonographer can simultaneously hold several contradictory feelings about the role of bonding. Such ambivalence illustrates the nature of emotional labour, and the ebb and flow of the work place, and highlights that a sonographer's position on the continuum can be mobile and that sonographers often take an individualised approach to their patients. Amy emphasises that, although she does not like the bonding aspect and would rather not partake in it, bonding does indeed have a place within the medical tool kit when working with expectant mothers with anxiety or depression. During the course of our conversation, Amy oscillated between the categories of 'Ultrasound is a Medical Test' and 'Psychological Uses for Bonding'. At times this is challenging to follow, however it is an example of the way sonographers engage in emotional labour and work out the differences between "self" and company (Hochschild 1983), and put their personal ideology on hold in order to offer patients the most appropriate care.

The juxtaposition of private and commercial uses of feeling can and does impact on the processes of emotion management for sonographers, as Hochschild (1983) discusses in the professional lives of flight attendants (pp. 18-19). Amy's account offers insight into the middle ground, where private feeling is still actively engaged within the commercial setting. Hochschild suggests that workers who use emotional labour can, over time, undergo a transmutation in the way private feeling is used and that the social engineering of commercial feeling takes precedence. Hazel describes a similar experience:

> I think it's part of the experience. I don't like promoting it [sonography] as a bonding experience really unless the patient for any reason feels that they … need it for that reason. Sometimes people present, and they've had problems. They've had … pregnancy loss before, and they are very concerned, and if that's … their background, then I would be much stronger in my promotion of it as a bonding experience. The rest of the time, I tread a fine line between showing them and making sure that they can see their baby and see some nice pictures of it but not promoting it as a show and tell thing for everybody to sit and goo and gah over the baby, because it is a clinical examination. It's a difficult examination for me. There's a lot of medical obligation riding on the results of it, and I don't want a whole lot of people thinking they're sitting there watching television. But I mean, having said that, I'm quite happy to show people, you know, explain what the things are that I'm looking at, but I try not to promote it as a ... show and tell kind of thing.
>
> - Hazel

Hazel also exemplifies the mobile nature of sonographers' beliefs on the continuum, as she believes in the use of ultrasound for bonding in cases where it would be psychologically beneficial as well as disliking the processes which create the cyborg foetus, and the way families over-emphasise the social rather than medical aspects.

Between Psychological Uses for Bonding and Routinisation

Sonographers in this category expressed greater flexibility in the way they approached the psychological uses of ultrasound for bonding as well as acknowledging that routine ultrasound may offer a bonding experience for families, even if they didn't personally agree with this. Sonographers in this category in particular used the idea of ultrasound as a tool. This approach seems to signify sonographers' movement between the medical and social contexts of ultrasound on the continuum in Figure 3. It also reflects the framework of the sonographer's dilemma, in that within the performative context of each scan the

sonographer chooses where they pitch their performance along the continuum from medical to social.

> I still am in the camp that it is very much for a medical scan. So I am very happy to show some photos, try to get some 3Ds, and I know that myself, I love them of my own children. I still cherish those pictures, and you know thankfully I was very bonded to my children anyway all throughout my whole pregnancy. Whether I had lovely pictures or not, I was very bonded. So I've got no doubt that it is quite bonding. It might be a really good tool in women who have got some bonding issues, maybe have had depression or perhaps postnatal depression in the past, or you know have got concerns about bonding. Maybe that could be really useful but in a medical sense in that way.
>
> - Alice

The view Alice expresses on bonding was quite indicative of the views of all the staff I interviewed at this site.[21] They each expressed an enthusiasm for the parents to engage with the images during the scan, but they also held concerns about parents' prior knowledge and understanding of the purpose of the scan, and concerns about the ways in which the patient would proceed if a medical condition or malformation was identified. This mix of questions, concerns, and prior judgements about each patient as they enter the scan room adds to the load of emotional labour and increases the likelihood of sonographers taking the burden of emotional labour home with them.

[21] 9 of 30 total sonographers were interviewed from the one specialist clinic, with another 3 being interviewed from a private clinic attached to the same hospital.

> With the mother I think it's quite a powerful tool, especially if you've got a mother who's got a bad history of recurrent miscarriages or has lost a previous child. I think if they come in, they can see their baby, they can see the heart's beating well, they can hear the heart beating. I think that's a pretty powerful tool. I think in terms of bringing in siblings, it's a disaster, you know, and aunts and uncles and whoever else. It's a bit of a disaster. But I think for the parents, I think ultrasound's quite a powerful tool.
>
> - Benjamin

Benjamin is Alice's manager and runs the day-to-day activities of the department as well as scanning patients. His experiences and answers often, but not always, set the tone for how his staff answered the questions. In instances where questions were contentious, individuals would often identify the department's standpoint on the issue and then identify their own perspectives alongside the department's position. They seemed to have no difficulty in holding these sometimes-contradictory perspectives within their workplace, and none suggested that these differing perspectives impacted on their ability to do their job. Grandey (2000) suggests that with appropriate support sonographers are able to generalise practices of surface and deep acting to the point where they are not a cause of energetic drain or stress.

Bonding as a Part of Routine Ultrasound

Within this category, sonographers recognised that bonding was a normal and generally expected part of routine ultrasound. Many emphasised that bonding was not the main purpose for the ultrasound, but that they enjoyed facilitating a bonding experience for families.

> We do 3-4D, absolutely. But that's only a little by-product at the end for fun. However, having said that, I think it's an extremely… it is a very intimate bonding experience for the patients, but it's not the primary use of it.
>
> - Whitney

> I'm happy to facilitate it as much as I can within the limitations of the examinations I do, but I don't feel responsible if the patient has not bonded.
>
> - Jean

> Look, I think there's value in that absolutely. It's sort of, we sort of play a part in because we will always at the end do a bonding-type picture if we can. …Our main concern is the wellbeing and the health of your baby, not the cute pictures, though we're happy to do them.
>
> - Nora

The perspectives expressed by these three sonographers were confirmed by many others. Here, we find an emphasis placed on the need to provide some form of bonding experience to keep patients satisfied, while also attempting to maintain the professional and medical importance of the examination. This clearly illustrates the sonographer's dilemma in choosing how to position themselves in relation to the performative space of routine obstetric ultrasound. Therefore, as each sonographer chooses to engage the patient socially, they are consciously dividing their time and focus between the medical obligations and social expectations of the scan.

> As far as giving them something to take away, I give them the majority of the pictures that would be identifiable to somebody. But I've always had this feeling that we shouldn't extend or do superfluous pictures, so I give them pictures of foetal features like hands and feet and limbs and face, things that they could identify, but I give them pictures that are out of my reportable sequence rather than take extras.
>
> - Terry

> It's odd because people pretty much, now-a-days, they know what they're looking at. They understand the images.
>
> - Rhonda

Each of these sonographer's opinions can be read through Dumit's (1999) framework of "expert images" (p. 175). Dumit suggests that medical images are "expert images" which are produced mechanically and require the interpretation of an expert to become legible and informative to a layperson (p. 175). Within this framework, Dumit (2012) identifies three types of actors, "experts, laypersons, and mediators", who participate in the process of objective self-fashioning around expert images (p. 367). The "objective self" is an active category developed through expert knowledge and solicited through facts (p. 367). Thus, the facts that shape the objective person of the foetus are produced through the electronic medium of obstetric ultrasound. These facts are invoked by the sonographer as expert and enacted by parents as both mediators and laypersons. As the foetus cannot and does not actively participate in this social construction, the sonographer and parents create and act out a persona on the foetus' behalf; the cyborg foetus therefore becomes a social entity through sonography (and also through other antepartum practices like naming and preparing a nursery) before it becomes an independent being. Therefore, the use of expert images and objective self-fashioning is critical to the creation of the cyborg foetus. The cyborg foetus is then the performative aspect of the scan which is given to the parents in the images which represent the identity of the foetus as a baby and act as representations of the baby prior to birth.

Women's Choice

Sonographers who identified a woman's right to choose her ultrasound experience were primarily focused on keeping their role in ultrasound as medical as possible. These sonographers indicated that although they thought ultrasound may be a bonding experience,

that bonding was more likely to happen when patients engaged with entertainment rather than medical scans. Sonographers at this point on the continuum were focused on their role in relation to the biomedical model of pregnancy and predominantly focused on the primary negative injunction of double bind theory (Bateson et al. 1956). Their focus on maintaining professionalism lead them to prioritise the medical diagnostic aspect of the screening test above the social meaning-making of doing family. That is not to say that these sonographers did not value doing family, but rather that they chose to separate doing family from the medical context and practices of the scans.

> I think that it [bonding and entertainment ultrasound] has its place as a stand-alone experience as long as the mothers are made aware that it is not a replacement for diagnostic ultrasound for the purpose of checking the baby's appearance and excluding abnormality.
>
> - Judy

Judy's emphasis on women's awareness of the purpose of ultrasound was shared by each of the sonographers in the category of 'women's choice', and with many other sonographers across the continuum. Sonographers were generally uneasy that women were not well-educated about the purpose of obstetric ultrasound and that they had very little information about what would happen if foetal demise or malformations were found. This is further emphasised by Lalor and Begley (2006) in their article 'Foetal Anomaly Screening: What Do Women Want to Know?', as their findings indicated that most women did not want to know what the screenings were looking for as they felt this knowledge only added to the already high levels of stress during pregnancy. This was contraindicated in cases where women were over thirty-five, or had already been told by a primary care provider that they were in a high-risk category. These women wanted risk assessment information, but only for

the specific health concerns for which they were already indicated as high risk (Ibid.).

Pro Bonding

Sonographers who were in favour of bonding emphasised the importance of making a connection between the images on screen and the bodily experiences of pregnancy. The two sonographers in this category believed strongly in practices of doing family, and actively engaged their patients in these practices. Though Lina was thirty-eight weeks pregnant at the timer of her interview, and her perspectives shed light on the transition from sonographer to parent. It was Paige who discussed the practice of ultrasound as a way of bringing back an awareness of the body.

> … when I'm scanning, they sort of can make that connection between movement, and they can see it on the screen. They can feel it in their tummy, and they're like 'hey that's actually, I can feel the baby'. ... It's just weird seeing it on the screen and then feeling it at the same time, but like they're making that connection already, so it's good. Definitely something that needs to be done.
>
> - Paige

The importance of being able to make physical and visual experiences connect, as Paige suggests, can be linked to a phenomenological understanding of the body, and of pregnancy. Emily Martin, in her book The Woman in the Body, emphasises the importance of reconnecting with the body to avoid the "fragmented and alienated condition" in which so many women who experience highly medicalised pregnancies end up (2001 p. 71). Martin (2001) also identifies that we need to look beyond the experiences of the woman, to a wider lens of social and cultural expectations and experiences. That is, Paige suggests using ultrasound as a tool for making women more aware of their bodies. Moreover, as a

way of restructuring some of the cultural connotations of the medicalisation of pregnancy to return the focus of pregnancy to a woman centred approach.

Conclusion

The theories, quotes, and discussions presented here begin to represent the messiness and complexity of the lived experience of sonographers as they practice routine obstetric ultrasound. This thesis, then, concludes with more questions than answers, and in doing so intends to move beyond a bounded theoretical approach to qualitative research. The aims of the study became to explore the emergent themes and experiences of sonographers as they practised and performed routine obstetric ultrasounds. As such, the results presented here represent a curiosity about what may be discovered, rather than a conclusive snapshot of Australian sonographers experiences. As such, the limitations of this study were centred around the shift from a focus on women's experiences, to sonographers experiences rather late in the data collection. Changing directions has resulted in an incompleteness of the data which could have been avoided if the focus was changed earlier, or if sonographers were the primary focus from the outset.

By piecing together theory from sociology, anthropology, and studies of nursing and midwifery, with the interviews from thirty sonographers, it becomes apparent that no one approach best represented their world views, nor best encapsulated the labour and challenges that sonographers face on a daily basis. Each chapter then aimed to explore the theories in practice by connecting them to the interview data. In chapter one, sonographers, as paramedical workers, utilised the technology of ultrasound as a medical screening test. Sonographers practised in the space between the professional - the woman's primary care provider - and the woman as a patient. In doing so, sonographers position sonography as a paramedical occupation (Freidson 1970). The importance of acknowledging sonographers

as paramedical paraprofessionals is implicit to understanding the industry practices of professionalism, as professionalism plays an important role in medicine, and sonographers as paraprofessionals practice professionalism to uphold the high standards of medicine and to meet patient expectations.

In chapter two, the focus was on understanding the broader implications of communication between sonographer, their employer, and the patient. By exploring the practices of doing family as practices of constructing and affirming connections between family members (Roberts et al. 2015). In articulating the balance of doing family and the medical expectation of sonography as a diagnostic screening test, the utilisation of Bateson and colleagues (1956) double bind theory became a productive set of rules from which to develop the sonographers dilemma. The sonographers dilemma is then an issue of communicative practices, whereby, the sonographer is positioned within a bind of conflicting expectations. For sonographers to be better supported, it is critical to evaluate the communicative practices between employers and sonographers, such evaluation would highlight areas for improvement. Once the employer and sonographer are united in their expectations of routine obstetric ultrasound, the project of patient education could be undertaken. Patient education, in this sense, is critical, as through education patient expectations could be altered to be more realistic, and as such, to be more accommodating of the sonographers need to first and foremost perform a medical examination.

Chapter three explored the processes and products of routine obstetric ultrasound. The purpose of which was to illustrate the overlap between medical and social expectations in meaning making, and to begin to highlight the ease with which confusion between the

sonographer and patient may be attained. In recognising the processes and products of routine obstetric ultrasound, sonographers and patients would both, be better able to work collaboratively to make meaning of the social value of personhood through the cyborg foetus (Johnson 2014) and to create channels for expressing medical concerns in a more socially located way.

The purpose of chapter four, was to attempt to apply the theories from chapters one to three, to a thematic case study from the data and in dong so show the complexity of the lived experiences of sonographers. In exploring the bonding continuum, it becomes apparent that there are many layers of expectation, and that each actor involved in the practices of routine obstetric ultrasound brings with them their front and back stage emotions and expectations (John 1996).

As the project evolved, there were more questions than answers. How can ASAR, the regulating body propose and support better educate and training for sonographers and their employers? How can sonographers, through their apprenticeships, be empowered with the confidence and skills they need to perform their medical and social functions? How can the industry recognise the emotional labour and acts of professionalism in which sonographers engaged to better support sonographers in their work and personal lives? How can the industry come to a shared understanding of the medical and social expectations of routine obstetric ultrasound to better facilitate relationships between sonographers and patients?

What this thesis concludes is that there is room within the occupation of sonography, within regulatory bodies and education programs, to better acknowledge the challenges

sonographers face, and to better equip them with tools and strategies for the workplace. Future research would aim to continue this line of the investigation to examine the processes and products of routine obstetric ultrasound more fully. Such research could begin to address the many unanswered questions of sonographers engagement with the invisible practices of professionalism and emotional labour outlined within this thesis. As such, these objectives could be achieved through a more theoretical approach to performance and performativity by utilising Butler (2011a; 2011b), and Austin (1975). As well as a critical focus on a cross-cultural comparison of studies of sonographers' and women's experiences of obstetric ultrasound such as in the works of Gammeltoft (2007) and Han (2009). Additionally, future research would aim to open up the questions of gender division among sonographers, and the role of education and experience on the types of roles sonographers engage with across the span of their careers. There is also scope to more fully explore the mental health and wellbeing of sonographers, and to focus, on the implications and impacts of sonographers anxiety and depression stemming from the interconnectedness of their fertility journeys and the experiences of the women they scan.

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Appendix 1:

Interview Protocols & Participant Information

The following pages contain the interview protocol's used. These protocol's served as a framework for discussion, as interviews were narrative, and only semi-structured.

The subsequent table contains the name*, location, qualifications, type of workplace, and experience for each of the sonographers interviewed for this study, it also contains the duration of each interview.

*All names have been changed in accordance with the MQHREC requirements.

Interview Protocol - Sonographer.

Background

- Can you tell me a bit about yourself?
  - (Sex - noted, but obviously not asked)
  - Country of birth (if not Aus, were qualifications in Aus, how many years practicing in Aus)?

Opening Questions

- Can you describe your job?
- What is a usual day for you?
- Could you talk me through the steps of a typical 18-20week morphology appointment?
  - Do you usually tell people the sex?

Education & Training

- What degree or degrees did you do to become a Sonographer?
- How many years experience do you have as a Sonographer?
  - How many of those years have you practiced prenatal sonograph?
- Do you specialise in prenatal sonography?
  - What influenced you to choose this specialisation?
  - Have you done any additional training or Professional Development to do prenatal sonography?
- From your education, or PD, can you remember a time you were given instruction or guidance on how to talk to women during an ultrasound?
  - Could you tell me more about this process?
  - What have you done to practice these skills?

Workplace

- *Location where you work/ Clinic or hospital name if you feel comfortable sharing?*
- Is your workplace...
  - Public / private?
  - Hospital / clinic?
  - General/ Specialist?

- What ultrasounds / package of services are offered at your workplace?
  - Routine 12, 18-20week?
  - 2D/3-4D?
  - Bonding/ paid non-routine?
  - Specialist?
  - High risk?

- What would you say is the demographic of patients at your workplace?

The next few questions are about your experiences doing ultrasounds.

- During an ultrasound...
  - If you had an ultrasound image in front of you from a Morphology scan which was normal, how would you describe it to the patient?
  - What if you saw something that looked possibly abnormal, how would you talk about something that looked abnormal but you weren't sure?
  - How would you discuss this abnormal image with a colleague who is going to rescan the patient?

- Who /how many people are allowed in the scan room?
- What are your feelings about using or promoting ultrasound as a bonding experience?

- Do you have children? [Yes/No]
  - Do you think this has influenced the way you work?

- Is there anything you would like to talk about that we haven't covered already?

Interview Protocol - Software Engineer/Physicist.

- What is your educational background? What degree did you do to get this job?
- Do you specialise in prenatal sonography?
  - if so, what influenced you to choose this specialisation?
- Were there additional qualifications required to do prenatal sonography?
- What is a sonograph before it is analysed by a computer/software?
- Are different algorithms used to 'look' at different parts of the body? (Are different programs run for prenatal sonography, than say looking for arthritis in a knee?)
- How in the technology between 2D, 3D, and 4D sonography different?
- How much manipulation is used in representing sonograph images?
- When you are improving the software what are you looking for?
  - Do you look at other ultrasound images and compare the detail?

Interview Protocol - Student Sonographer.

Background

- Can you tell me a bit about yourself?
  - (Sex - noted, but obviously not asked)
  - Country of birth (if not Aus, were qualifications in Aus, how many years practicing in Aus)?

Opening Questions

- Can you describe your job?
- What is a usual day for you?

Education & Training

- What degree or degrees are you doing to become a Sonographer?
- Do you have a medical background before Sonography?
- Do you want to specialise in prenatal sonography?
  - What influenced you to choose this specialisation?
  - Will you do any additional training or Professional Development to do prenatal sonography?
- As part of your current education, are you given instruction or guidance on how to talk to women during an ultrasound?
  - Could you tell me more about this process?
  - What have you done to practice these skills?

Workplace

- *Location where you work/ Clinic or hospital name if you feel comfortable sharing?*
- Is your workplace...
  - Public / private?
  - Hospital / clinic?
  - General/ Specialist?

- What ultrasounds / package of services are offered at your workplace?
  - Routine 12, 18-20week?
  - 2D/3-4D?
  - Bonding/ paid non-routine?
  - Specialist?
  - High risk?

- What would you say is the demographic of patients at your workplace?

The next few questions are about your experiences doing ultrasounds.

- During an ultrasound...

    - If you had an ultrasound image in front of you from a scan which was normal, how would you describe it to the patient?
    - What if you saw something that looked possibly abnormal, how would you talk about something that looked abnormal but you weren't sure?
    - How would you discuss this abnormal image with a colleague who is going to rescan the patient?

- Who /how many people are allowed in the scan room?
- What are your feelings about using or promoting ultrasound as a bonding experience?

- Do you have children? [Yes/No]
    - Do you think this has influenced the way you work?

- Is there anything you would like to talk about that we haven't covered already?

Interview Protocol - Pregnant Woman.

- Can you tell me a bit about yourself?
- How far along are you?
- How did you find out you were pregnant?
- Who did you tell immediately?
- How long did you wait to announce you were pregnant?
- Have you had/ are you planning to have an ultrasound?
    - 12, 18-20 weeks?
    - 2D, 3D /4D
    - Did you want to know the sex?
    - Can you tell me your ultrasound story? Feelings, fears, excitement?
    - Were you offered images to take home?
        - Did you?
        - What have you done with these images?
- Did you use assisted reproductive technologies?
- What sources of information do you use for pregnancy?
    - Mother, girlfriends, apps, books, Drs, colleagues, online etc.
- How are you tracking your pregnancy?
    - Tech, wearables, apps, online?

Participant Information

Sonographer	Gender	Region	Qualifications	P - Pr	H - C	G - S	Total Experience	O&G Experience	Interview Duration HH:MM:SS
Linda	F	TAS	Student - Graduate Diploma of Medical Sonography.	Private	Both	General	0	Not Applicable	00:21:42
Lina	F	VIC	Bachelor of Ragiology; Graduate Dipoloma of Medical Ultrasound.	Public	Hospital	General	5	1	00:36:53
Todd	M	rVIC	Bachelor of Medical Imaging (in New Zealand).	Private	Clinic	General	7	Not Applicable	00:35:26
Judy	F	rVIC	Bachelor of Science Nuclear Medicine; Graduate Diploma of Medical Ultrasound.	Private	Clinic	General	7	Not Applicable	00:13:52
Amy	F	WA	Undergraduate in Radiation Therapy; Graduate Diploma of Medical Sonography.	Private	Both	General	7	Not Applicable	00:20:44
Paige	F	NSW	Advanced Medical Sciences - Immunology; Graduate Diploma of Medical Sonography; PhD.	Public	Clinic	Specialist	9	9	00:20:33
Katie	F	NSW	Bachelor of Applied Science in Medical Radiation Science - Diagnostic Radiography; Graduate Diploma of Medical Sonography.	Private	Clinic	Specialist	10	7	00:23:47
Keira	F	NSW	Declined to say.	Private	Clinic	Specialist	10	6	00:23:03
Sean	M	rQLD	Degree in Radiography (diagnostic medical imaging); Graduate Diploma Medical Imaging	Public	Clinic	General	10	Not Applicable	00:30:07
Stanley	M	NSW	Nursing; Midwifery; ASUM Diploma of Medical Ultrasound (limited Obstetrics & Gynaecology).	Public	Hospital	Specialist	11	11	00:36:46
Dan	M	NT	Diploma of Xray and Radiography (in the United Kingdom); ASUM Diploma of Medical Ultrasound	Public	Hospital	General	15	Not Applicable	00:27:22
Diane	F	NSW	Diploma in Medical Radiation Technology, specialising in Nuclear Medicine (University of Sydney); Upgraded MRT Strand to Degree in Medical Radiation Technology and Nuclear Medicine; Postgraduate Diploma in Ultrasound.	Public	Hospital	Specialist	18	14	00:39:53

Sonographer	Gender	Region	Qualifications	P - Pr	H - C	G - S	Total Experience	O&G Experience	Interview Duration HH:MM:SS
Gina	F	NSW	Undergraduate Degree in Physics; transferred to Nuclear Medicine; Graduate Diploma of Medical Ultrasound; Graduate Certificate in Tertiary Education; Masters in Ultrasound	Private	Clinic	Specialist	20	18	00:52:18
Hannah	F	rNSW	Diploma of Radiography; Graduate Diploma of Ultrasound	Private	Clinic	Specialist	20	19	00:41:54
Carol	F	Unassigned	Certificate of Competency in Radiography; Graduate Diploma of Ultrasound	Private	Clinic	General	20	Not Applicable	00:20:40
Alice	F	NSW	Diploma in Medical Radiation Technology Graduate Diploma of Medical Ultrasound	Public	Hospital	Specialist	20	17	00:25:33
Benjamin	M	NSW	Bachelor of Science; Bachelor of Radiation therapy; Graduate Diploma of Medical Sonography	Public	Hospital	Specialist	21	19	00:30:21
Prue	F	WA	Declined to say.	Private	Clinic	General	22	Not Applicable	00:10:31
Nora	F	NSW	Bachelor of Applied Science in Medical Radiology; Graduate Diploma in Medical Sonography; Phd candidate.	Public	Hospital	Specialist	22	17	00:22:12
Samantha	F	QLD	Diploma of Radiography (in South Africa); Graduate Diploma of Medical Ultrasound (in the United Kingdom).	Public	Hospital	Specialist	22	18	00:28:03
Deanna	F	ACT	Diploma of Applied Sciences in Nuclear Medicine Technology; Graduate Diploma of Applied Sciences in Ultrasound; Master of Applied Sciences in Medical Sonography.	Public	Hospital	Specialist	23	10	00:46:06
Karen	F	rNSW	Medical Radiography Science; Graduate Diploma of Ultrasound.	Public	Hospital	General	23	Not Applicable	00:24:36
Hazel	F	NSW	Bachelor of Radiological Sciences; Post Graduate Diploma of Medical Ultrasound.	Private	Clinic	General	25	Not Applicable	00:23:28

Sonographer	Gender	Region	Qualifications	P - Pr	H - C	G - S	Total Experience	O&G Experience	Interview Duration HH:MM:SS
Jean	F	NSW	Associate Diploma of Nuclear Medicine; Degree in Nuclear Medicine; Graduate Diploma of Medical Ultrasound; Masters; PhD.	Private	Clinic	Specialist	25	12	00:59:07
Lisa	F	VIC	Diploma of Radiography; Diploma of Medical Sonography.	Private	Clinic	Specialist	25	16	00:17:18
Whitney	F	WA	Degree in Radiography; ASUM Diploma of Medical Ultrasound .	Private	Clinic	Specialist	25	14	00:18:50
Marie	F	WA	Diploma of Diagnostic Radiography; Graduate Diploma of Ultrasound; Master of Sonography.	Public	Hospital	General	28	Not Applicable	00:24:29
Rhonda	F	QLD	Diploma of Radiography (in the United Kingdom); Graduate Diploma Advanced Medical Imaging (Ultrasound).	Private	Clinic	General	30	Not Applicable	00:26:51
Terry	M	SA	Advanced Certificate in Radiography; Diploma of Radiography; Bachelors of Radiography; ASUM Diploma of Medical Ultrasound; Graduate Diploma of Ultrasound; Master of Sonography.	Public	Hospital	General	30	Not Applicable	01:00:53
Florence	F	NSW	Initial training in Canada, with United States Certification; ASUM Diploma of Medical Ultrasound.	Public	Hospital	Specialist	31	25	00:19:04

Appendix 2:

Macquarie University Human Ethics Approval

Office of the Deputy Vice-Chancellor
(Research)

Research Office
Research Hub, Building C5C East
Macquarie University
NSW 2109 Australia
T: +61 (2) 9850 4459
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ABN 90 952 801 237

MACQUARIE University
SYDNEY·AUSTRALIA

22 August 2016

Dear Professor Downey

Reference No: 5201600547

Title: *An exploration of pregnant women's prenatal ultrasound experiences*

Thank you for submitting the above application for ethical and scientific review. Your application was considered by the Macquarie University Human Research Ethics Committee (HREC (Human Sciences & Humanities)).

I am pleased to advise that ethical and scientific approval has been granted for this project to be conducted by:

- Macquarie University

This research meets the requirements set out in the *National Statement on Ethical Conduct in Human Research* (2007 – Updated May 2015) (the *National Statement*).

Standard Conditions of Approval:

1. Continuing compliance with the requirements of the *National Statement*, which is available at the following website:

http://www.nhmrc.gov.au/book/national-statement-ethical-conduct-human-research

2. This approval is valid for five (5) years, subject to the submission of annual reports. Please submit your reports on the anniversary of the approval for this protocol.

3. All adverse events, including events which might affect the continued ethical and scientific acceptability of the project, must be reported to the HREC within 72 hours.

4. Proposed changes to the protocol and associated documents must be submitted to the Committee for approval before implementation.

It is the responsibility of the Chief investigator to retain a copy of all documentation related to this project and to forward a copy of this approval letter to all personnel listed on the project.

Should you have any queries regarding your project, please contact the Ethics Secretariat on 9850 4194 or by email ethics.secretariat@mq.edu.au

The HREC (Human Sciences and Humanities) Terms of Reference and Standard Operating Procedures are available from the Research Office website at:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics

The HREC (Human Sciences and Humanities) wishes you every success in your research.

Yours sincerely

Dr Karolyn White
Director, Research Ethics & Integrity,
Chair, Human Research Ethics Committee (Human Sciences and Humanities)

This HREC is constituted and operates in accordance with the National Health and Medical Research Council's (NHMRC) *National Statement on Ethical Conduct in Human Research* (2007) and the *CPMP/ICH Note for Guidance on Good Clinical Practice.*

Details of this approval are as follows:

Approval Date: 12 August 2016

The following documentation has been reviewed and approved by the HREC (Human Sciences & Humanities):

Documents reviewed	Version no.	Date
Macquarie University Ethics Application Form		Received 11/07/2016
Response addressing the issues raised by the HREC		Received 31/07/2016
Macquarie University Participant Information and Consent Form – Pregnant Women	1	11/08/2016
Macquarie University Participant Information and Consent Form – Technicians & Engineers	1	11/08/2016
Interview Questions – Clusters (Interview questions for pregnant women, interview questions for prenatal sonography technician, interview questions for sonography software engineer)	1	31/07/2016
Interview Participant Advertisements – Pregnant Women, Sonographers, Sonography Software Engineers	1	31/07/2016

***If the document has no version date listed one will be created for you. Please ensure the footer of these documents are updated to include this version date to ensure ongoing version control.**

Professionalism and emotional labour practices are integral to sonographers' performances of routine obstetric ultrasounds. This study utilised thematic analysis of thirty interviews with Australian sonographers to reveal their engagement with the invisible practices of professionalism and emotional labour. The key themes uncovered can be described as processes (professionalism, impression management, and emotional labour) and products (expert images, and the cyborg foetus). In uncovering these practices, it becomes apparent that the performance of the sonographer in the social aspects of pregnancy care as well as the medical is vastly more complex than previously envisioned.