‘Smile for the Camera’:

A Critical Exploration of the Meanings of Routine Ultrasound for Pregnant Couples

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Abstract

There has been wide-spread research into the use of ultrasound in pregnancy with various participants and using different methodologies, however the field has been relatively under theorised. This research develops an integrated theoretical lens which provides an effective foundation to explore the increasing routinisation of ultrasound. With this approach it was possible to explore how seven pregnant heterosexual New Zealand couples drew on notions of visual primacy, the technological imperative and consumption and choice while working together to discursively construct what their experience with ultrasound service providers meant to them. This research was unique in its collaborative design of interviewing the pregnant woman and her partner together with their ultrasound images on hand to interact with. The couples (aged 25-40) undertook a joint semi-structured interview with the researcher in their homes, lasting between 45 to 90 minutes, which was digitally video-recorded and subsequently transcribed verbatim. They were invited to bring any images received as part of their ultrasound scan(s). The couples actively constructed certain aspects of their experience in particular ways. These included: 1) constructing the ultrasound as normal and commonsense; 2) constructing the pregnancy as legitimate and valid; 3) constructing the normality of the foetus; and 3) constructing the baby with personhood and gender. Understanding ultrasound as not just a normal, but a necessary site for the techno-visual birth of the foetus reinforced dominant biomedical understandings about what counts as real knowledge and positioned the pregnant couples as good parents-to-be, demonstrating their responsible consumption 'choices' on behalf of their – now visible and so viable – 'unborn baby'. With the increasing routinisation of 2D ultrasound, and wider availability of 3D and 4D technology, these findings have implications for maternity care policy development in terms of women's reproductive rights and pregnant couples' (in)ability to make an informed decision about consent or refusal.

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Table of Contents

List of Tables

Visualising the Womb: Ultrasound Research as a Field of Study

This thesis investigates the way that meanings are made within the experience of ultrasound in pregnancy. Following a brief account of knowledge and its production I trace some of the historical context of ultrasound technology and examine the social science research conducted on the use of ultrasound in pregnancy. After introducing the context of increased medicalisation of pregnancy, I discuss how scientific technology came to be seen as imperative to the progression of medical surveillance into the pregnant experience. As biomedicine increasingly permeated every aspect of pregnant women's lives, so the presence of obstetric ultrasound became established and cemented as a necessary process in the medical management of pregnancy.

There have been many and various studies conducted on the use of ultrasound in pregnancy. This chapter traces this research through the feminist critique of biomedical understandings of pregnancy, the comparatively little amount of qualitative research that involves pregnant women's partners, the abundance of international research on women's experience of ultrasound from a biomedical perspective, and some of the latest research looking at the ever-evolving progression of ultrasound technology and its consequences for pregnant women.

Approach to Knowledge

This research is embedded in a social constructionist approach to knowledge production. The four central epistemological assumptions that influence this social constructionist research are that, first, there is no one 'true' way to know something that can be revealed by more and more detailed observation (Gergen, 1985). Rather, people 'do' knowledge together and there may exist multiple understandings of any situation. No one way-of-knowing can be said to be more real than another, none can be deemed more valid, or superior because 'what there is' is socially constructed, collectively created and not one truth in isolation. Second, in this approach knowledge is seen as historically and culturally situated

(Burr, 2003). As a social constructionist researcher, I explore how the cultural, moral, political and economic forces of this particular time work to sustain specific kinds of knowledge so that they are currently accepted as commonsense and 'just the way things are'. Third, knowledge is constructed between people in the active communal exchange of social life, in other words, knowledge-making is a social process. Language is the medium through which we understand the world and we use it in a "continuous process of generating meaning together" (Gergen, 1999, p. 49). Therefore it is the process of social interaction and meaning making that is of interest to research, because as we talk to each other the world gets constructed (Burr, 2003). Fourth, socially constructed understandings of the world are bound up in power relations and influence social action (Burr, 2003). If people construct knowledge together, their knowledge construction is embedded in a context where social forces act upon the language available to them. Knowledge and understanding is, therefore continually restructured through social interaction, and the world that is constructed legitimates some forms of knowledge and illegitimates other forms of knowledge. This continual process of construction, deconstruction and reconstruction both constrains and enables human possibilities (Gergen, 1999; Stam, 2002).

One way socially constructed knowledge is promoted and circulated is by drawing on certain public understandings or meaningful systems of representation, identified as discourses, which provide us with the language to talk about any particular subject at any particular moment in time (Hall, 1997/2001a). As they are taken up by certain individuals and institutions, specific discourses or 'ways of knowing' begin to be understood as representing reality, or 'the way things are'. Those with the least access to the specific knowledge associated with dominant discourses are rendered less powerful, and their different 'ways of knowing' suppressed, in comparison to those experts 'in the know' (Foucault, 1980; Hall, 1997/2001a). This research is influenced by a feminist approach to knowledge by making explicit the circulating power relations that are a key feature of how 'the system' is experienced in both women and men's everyday context (Peters, Jackson, & Rudge, 2008). It is important to acknowledge the structural and political forces influencing that which is

considered socially and personally meaningful in any particular time and place. This chapter will now focus on a review of research conducted into how pregnancy has come to be constructed and how this construction has influenced understandings and the subsequent construction of the reproductive technology of ultrasound.

The Biomedical Construction of Pregnancy

Pregnancy was beginning to be reconceptualised from a natural reproductive experience to medically problematic in the early twentieth century. *Prenatal Care*, a document published by the United States Children's Bureau in 1913, and again in 1935, was an example of biomedicine's increasing claim to authority over pregnancy. This document was distributed to over twenty-two million pregnant women over a period of 30 years in the early twentieth century (Speert, 1980) and helped secure biomedicine's cultural authority by representing pregnancy as "potentially pathological" and "naturally disease-like", necessitating that it come under medical jurisdiction (Barker, 1998, p. 1069). Pregnancy came to be deemed not as a normal state but as "nature under strain" (Prenatal Care, 1935) and by resorting to notions of objectivity and rationality, scientific-based medical care was seen as the commonsense approach to the 'problem' of pregnancy. By increasingly normalising medical intervention into antenatal practices, biomedical institutions were able to gain increased access to observe pregnancy and therefore monitor, surveille and regulate pregnant women.

Biomedical frames of reference and knowledge came to be accepted and legitimated due to the construction of pregnancy as an inherently risky state requiring medical management by specialist experts (Lupton, 1999). When pregnant women are no longer understood as individuals but as bodies containing the potential for unique human life then pregnancy becomes "a perilous journey" (Lupton, 1999, p. 66) which women cannot be trusted to travel through alone. This biomedical understanding of pregnancy-as-risk carries the implicit assumption of the existence of a rational/emotional dichotomy with medicine, science and technology on one side and the pregnant woman 'at the mercy of her hormones' on the other. Taken as objective fact about the true nature of medicine and women, this dichotomous assumption obscures the

cultural construction of knowledge and practice that constitutes pregnancy and 'modern' medicine in any particular culture at any particular historical time point (Henwood, 2001). There are no separate, 'pure' domains of science and non-science, instead the production of scientific knowledge, that which is privileged over experiential knowledge, occurs in the culture at large (Haraway, 1988). By appealing to notions of objectivity and rationality, biomedicine utilises two of the three most common guarantees of truth – "science, God and commonsense" (Weedon, 1997, p. 122). The taking up of scientifically loaded biomedical language, assumptions, and values is part of the medicalisation of popular perceptions of pregnancy. As Van Dyck (1995) explained, the public seem to be stubbornly persistent in their acceptance of medical authority and continue to uncritically embrace biomedical and scientific understandings of health and illness. As the public takes up the notion that the ultimate truth can be claimed only with the backing of medical knowledge, it becomes difficult not to be drawn into representations of the pregnant body as deviating from the norm and therefore as vulnerable, susceptible and in need of 'expert' guidance (Lupton, 1999).

In constructing pregnancy as a state of risk, there is an increasing reliance on the use of scientific instruments in the examination of the pregnant condition. In their research on the construction of pregnant embodiment across three generations, Nicolson, Fox and Heffernan (2010) found that women's pregnancies were defined by an increased culture of medicalisation, and increased pressure to express their pregnancy by engaging with medical technologies. Their study was an example of how scientific discourse hailing the necessity of amniocentesis, in vitro fertilisation, electronic foetal monitoring, and ultrasound legitimates more and more space for medical intervention and technical management of pregnancy (Donovan, 2006; Petchesky, 1987). Technological instruments for monitoring pregnancy are constructed as nonpartisan, objective tools based in scientific truth, but they are not neutral advances, they "enscribe and enforce" particular meanings based on the institutions making, funding or overseeing the technological discoveries (Hartouni, 1991; 1992, p. 64). When pregnant woman are constructed as in a constant state of "potential foetal catastrophe" (Ivry, 2009, p. 199) then

progressive technologies are seen as a way to minimise nature's mistakes.

Ultrasound Technology

One particular technology that has greatly enforced biomedicine's dominance during pregnancy is the ultrasound machine. Prior to ultrasound technology, doctors would have to enter into dialogue with the pregnant woman to gather reports of the symptoms she had been experiencing in order to confirm the pregnancy (i.e. quickening - when the woman can first feel foetal movement). Doctors had to listen to women's reports of sensory indicators and the resulting diagnosis came from mutual understanding and experience (Firth, 2009). With the development of ultrasound, women's "internal states were now technologically re-described" (Rapp, 2000, p. 125) and doctors no longer had to enter into dialogue with women. In the spirit of scientific authority, women's experiential knowledge was discredited in favour of the objective data directly available to the physician in the ultrasound image. Physicians now had full access to a kind of "panoptics of the womb" (Petchesky, 1987, p. 277) which they could use to exercise maximum control over the pregnancy as the mother's baby became the doctor's patient (Zechmeister, 2001).

Originating in sonar detectors for submarine warfare, medical 'sonar' was first considered in the 1940's to diagnose abdominal tumours (Petchesky, 1987). In the late 1950's it was noticed that clear echoes could be obtained from the foetal head. A transducer sends sound waves through the amniotic fluid which are reflected back as an image (scan) when they bounce off foetal structures (Petchesky, 1987). Traditionally embedded in a purely biomedical context, sonographers and/or radiologists use the technology to produce a 2D 'picture' of the foetus from which they gather information. Early in the pregnancy, ultrasound technology is used to elicit such information as the number of foetuses, heartbeat, foetal positioning, location of the placenta, and gestational age. Further into the pregnancy, ultrasound images are employed in more diagnostic ways, such as to measure the amount of fluid behind the neck of the foetus (the nuchal fold or nuchal translucency), which may identify a higher risk of chromosomal abnormality (i.e. Down's Syndrome). Visual examinations

through ultrasound are also used to aid in the detection of possible anomalies such as spina bifida and anencephaly (Harris, Connor, Bisits, & Higginbotham, 2003; Taylor, 1998). Sullivan (herself a sonographer) described how the skills and ability of the sonographer increased over time as visibility grew:

> "A second/third trimester foetal exam performed in the early 1970s consisted of identifying fetal position and cardiac motion and performing rudimentary measurements for approximation of foetal age. Current protocols now require the identification of detailed neurologic, cardiac, digestive, urinary, and skeletal structures as well as numerous measurements and mathematical calculations of ratios and indices" (Sullivan, 2002, p. 211).

The invention of ultrasound technology allowed biomedical experts to let "the light of scientific observation" in (Harrison, 1981, p. 774) to monitor, measure and surveille the foetus. Traditional (non-technologically aided) pregnancy became constructed as a primitive, risky "throwback" (Dumit & Davis-Floyd, 1998, p. 9) in need of technological intervention in order to secure the perfect pregnancy experience and perfect pregnancy outcome (a healthy baby; Rothman, 1985, 2001). Doctors, armed with scientific technological authority and their ultrasound transducer, "try to make sure that foetuses, whose production they oversee, are of consistently high quality" (Taylor, 2000b, p. 394).

From its biomedical beginnings, ultrasound has become constructed as a necessary part of 'doing pregnancy' in the Western world (Gross & Pattison, 2007). Over the past two decades ultrasound technology has advanced from static 2D pictures to more immediately comprehensible 3D images. Here a number of 2D scans are taken from different angles and used to construct a 3D image. Pregnant couples can now be offered not just the printout of the 2D ultrasound 'photo' (sonogram), they can also take a CD of digital 3D images. More recent developments have seen the introduction of 4D 'live-action' ultrasounds where practitioners can produce 3D images in 'real-time', which creates a sort of "foetal documentary" (Kroløkke, 2010, p. 146) which can be burned onto a take-

home DVD.

The ultrasound image

Ultrasound technology produces an image of the inside of the pregnant woman's body for all those present to see, or in other words, "a semi-public outing of the inner body" (Kroløkke, 2011, p. 18). With this image, the internal foetus become externally discernible; with ultrasound machine-mediated vision the private and hidden becomes knowable and public (Gregg, 1995). However, whether rendered in 2D, 3D or 4D, meaning is not derived by the image speaking for itself. Instead, the foetal ultrasound image requires the services of a "ventriloquist" (Haraway, 1992, p. 311) in the form of the sonographer who, as the interpreter, stands (often literally) between the scanned image and the pregnant woman. However, it is not merely the sonographer who makes meaning of the image, as Petchesky (1987) notes, no image is produced in a cultural void and in searching for the meaning of an image one must look at how the contents are organised and interpreted in the wider cultural environment (Jonsson, 2007). The 'facts' of ultrasound found through the expert decoding of a foetal scan are historically and socially constructed and are subject to multiple interpretations (Mitchell, 2001; Mitchell & Georges, 1997; Roberts, 2011) so that the meaning of an image can never be "finally fixed" (Hall, 1997/2001b, p. 325).

Acknowledging the context of an image is crucial to exploring how the image is understood and given meaning. This includes consideration of the social life and history of the image (Lister & Wells, 2001) such as how and when the image is produced and by whom; how the image and its meaning(s) are communicated; how these are received, circulated, accumulated, negotiated and perhaps transformed, and by whom; and so on (Hall, 1997/2001b; Jenks, 1995; Pink, 2003; G. Rose, 2007). Consideration of those doing the looking is also important (myself as a researcher included) because it is not possible to stand-back and 'neutrally' look at an ultrasound image. To look/see is always an embodied experience undertaken by someone performing (whether consciously or not) a specific identity in a particular context (Lister & Wells, 2001). The production of a visual image of the foetus through ultrasound and the associated production of what this image means is a dynamic social process. Instead of taking for granted

the conflation of appearance with reality (Jenks, 1995; Michaels, 1999; Palmer, 2009b), we can examine the consequences of ultrasound-guided vision when it is constructed as a vital part of pregnancy. The meaning of an ultrasound scan is not straightforward and depends upon who has the power to see the image and therefore 'know the truth' (Pink, 2003).

Not only do ultrasound images serve as visual proof and public confirmation of pregnancy (Ekelin, Crang-Svalenius, & Dykes, 2004), but these images can now be seen in "advertisements for cars, telephone companies and television programming, in posters warning of the dangers of smoking during pregnancy, in violent confrontations over the issue of abortion, in proudly displayed ultrasound photos, in movies, and in the tiny pink plastic wombs of mummy-to-be dolls" (Mitchell, 2001, p. ix). In her study of American corporate advertising's use of sonographic foetal images, Mehaffy (2000) examined multiple television advertisements that had the foetus endorsing a range of products and services from diapers to insurance to entire telecommunications corporations. Mehaffy concluded that with the appropriation of sonographic images for advertising purposes the foetus had indeed 'gone public' in consumer culture.

Some recent examples of the ultrasound's appearance in popular culture include television sitcom *Friends* and 2007 movie *Juno*. In the eighth season of the long-running Friends series there is a scene where two of the main characters, Ross and Rachel, are having an ultrasound. The ultrasound technician points out the foetus to pregnant Rachel and Ross, who make the appropriate reactions to seeing the image on the screen. However when the ultrasound technician steps out of the room, Rachel bursts into tears and shamefully admits that she can't see anything in the ultrasound image. When Ross asks her why she didn't say anything during the scan Rachel replies, "I didn't want her to think I was a bad mother because I can't even see my own baby!" (Bilsing, Plummer, & Epps, 2001). Later in the episode Ross and Rachel show the take-home shot of the ultrasound image to the other four characters and upon seeing the image Chandler exclaims, "Look Ross, it's got your wavy black lines" (Bilsing, Plummer, & Epps, 2001). These two scenes touch on some of the assumptions underlying what ultrasound images are understood to represent and the implications these understandings

have for pregnant women, their partners and their position as parents-to-be, which I will discuss more in-depth in chapter two.

The movie *Juno* follows an American teenager confronting an unplanned pregnancy. The ultrasound scene features the title character Juno having an ultrasound scan with her stepmother and her best friend at her side. As the three characters joke, cry and rejoice during the scan the female technician (who is as yet unaware of Juno's plan to adopt the baby out) is becoming increasingly tense. When the technician becomes aware of the adoption plan she exclaims, "Oh well thank goodness for that!" (Malkovich, Halfon, Novick, Smith, & Reitman, 2007) as she views teen parents as providing a poisonous environment in which to raise a child. This evokes a furious reaction from all three characters, including a show-stopping tirade from Juno's step-mother ending with, "You think you're so special because you get to play picture pages up there? My five year-old daughter could do that and let me tell you she's not the brightest bulb in the tanning bed!" (Malkovich et al., 2007). Juno's stepmother calling out the ultrasound technician is what makes this scene both shocking and hilarious. As 'patients' of medical institutions, pregnant women, and other ultrasound audience members are supposed to be ever so grateful to the medical experts for 'letting us see'. We are not to question their superior technical seeing or challenge the implicit claim that this visual access gives them moral authority of what is seen.

As Mehaffy's (2000) investigation and the selected film and television examples show, viewing images of the foetus is not an impartial, disinterested or disembodied activity. Shared cultural understandings are drawn upon to create understanding for anyone involved in the ultrasound examination and subsequent dissemination of the ultrasound image.

Social Science Research on Ultrasound in Pregnancy

This section reviews some social science research into the use of ultrasound technology in pregnancy including early feminist critique of the technology, the focus (or lack thereof) on pregnant women's partners in ultrasound research, ultrasound as a biomedical event and pregnant women's experience of this,

research around ultrasound conducted outside of North America and Europe, and also some of the most recent research on 3D and 4D ultrasound.

Early feminist critique

A call against the increased medicalisation of pregnancy began in the 1980's with feminist researchers such as Ann Oakley, Barbara Katz Rothman, Rosalind Petchesky, Carol Stabile and Barbara Duden questioning the rapid rise and unhampered routinisation of this 'revolutionary' visualising technology. Oakley (1984) highlighted how single-mindedly visual access of the foetus had been pursued, at the expense of clinical evaluation and with little or no consideration for the pregnant woman's feelings about this method of surveillance. Indeed she mentions that only as late as 1982 was there a study that evaluated 'maternal enjoyment' of the ultrasound scan. This study found that women who received 'high-feedback' in the form of verbal feedback about foetal size, shape and movement while being allowed to look at the screen showed more positive attitudes towards the scan than those in the 'low-feedback' group who were simply told that everything was fine (Campbell, et al., 1982, p. 59). Oakley noted that the most remarkable thing about this study was that, 24 years after the initial reports about the use of ultrasound in pregnancy, this was the first published acknowledgement that not only does ultrasound allow obstetricians to see the foetus but, "it is now possible for a mother to see her foetus" (Campbell, et al., 1982, p. 60).

Rothman (1985, 1986) discussed how this increasing focus on the foetus at the expense of pregnant women worked to further fuel the notion that the ultimate goal of pregnancy is to ensure the perfect end product. Ultrasound could be used to monitor the process of production, and subsequently as a tool for the medical community to further extend authority over the pregnant woman in the strive to secure a perfect baby (the product of conception; Rothman, 1985). Later in the eighties, Petchesky joined the voices questioning ultrasound technology, especially in relation to abortion politics, in her decoding of (as she called it) the 'pro-life' propaganda piece *The Silent Scream* which claimed to show ultrasound footage of what a foetus (the 'victim') goes through during an abortion (Hartouni, 1991; Petchesky, 1987). Petchesky used this piece to point out that you cannot

separate the visual images of the ultrasound scan from the wider cultural and political context within which they are embedded. She highlighted that the unquestioned visual inference of foetal separateness, personhood and autonomy was not an inevitable outcome of ultrasound technology, but that the technology came to signify this due to a cultural climate where women were increasingly viewed as a 'hostile environment' for their foetuses. Stabile also examined the conditions that had made it possible for the female body to have gone from "a benevolent, maternal environment into an inhospitable wasteland at war with the innocent person within" (Stabile, 1992, p. 179). Focusing on two issues of *Life* magazine, published 35 years apart featuring the work of 'foetal' photographer Lennart Nilsson, Stabile offered a comparison between the two publications which highlighted the shifting political ideologies of reproduction. The first edition was published in April 1965, well before ultrasound images of the foetus had appeared on the scene and Stabile noted that the magazine images included parts of the pregnant woman's internal organs and the placenta and that the 'mother' was constantly given reference to in the text as a crucial part of the process being documented. In contrast, the later edition, published in August 1990, featured no trace of the pregnant woman's body in the foetal 'photographs' and instead of linking the foetus to the maternal environment, the text emphasised the distinction between the embryo/foetus and the female body (Stabile, 1992). Stabile (1992) argued that it was resources such as these that reinforced the capitalist notion that the climax of reproduction was the most important aspect of the process. When the product is introduced into the marketplace its perfection must already be guaranteed. Duden (1993) also provided a reading of the two Lennart Nilsson *Life* publications. She pointed out that such media presentations of scientifically established biomedical 'facts' culminate in a public culture that supports and reproduces the notion of the ultrasound scan as an image of 'Life Itself' (Duden, 1993; see also Haraway, 1997 and Michaels, 1999). These early feminist social science critiques of a growing fixation on foetal images and the increasing routinisation of ultrasound in pregnancy set the scene for more in-depth investigations into what pregnant women, their partners and sonographers made of the technology.

The presence of partners in ultrasound research

Some of the first literature to document the meaning of ultrasound technology for pregnant women is also some of the only literature that includes the pregnant women's partners, and couples being interviewed together. Interestingly, this research was not initially focused on ultrasound in pregnancy. Between 1987 and 1993 Sandelowski and her colleagues conducted 288 interviews with 62 childbearing couples. The purpose of these interviews was to gather qualitative and longitudinal data on the transition to parenthood for infertile couples. Each of the couples had had at least one ultrasound and in the course of these interviews there was enough discussion on the topic of ultrasound that Sandelowski felt it warranted a secondary analysis of the interview data. She found that although ultrasound was originally used as a medical diagnostic tool, it had come to have different meanings to the pregnant couples who experienced it, especially in relation to the social context of its use. Specifically the ultrasound scan was not only a piece of medical documentation for the couples, but also a baby picture; and the examination was not merely a medical procedure, but an occasion to meet the baby (Sandelowski, 1994a; also see Sandelowski & Black, 1994). Sandelowski warned that some could reinterpret the social nature of ultrasound and use this as a coercive tool against women based on certain notions of 'good parenting'. Sandelowski also detailed how the couple interviews showed that ultrasound "altered the epistemology of expectant parenthood" (Sandelowski, 1994b, p. 234; also see Sandelowski & Black, 1994) as it worked simultaneously to enable paternal knowing while simultaneously disabling maternal knowing of the foetus. Sandelowski claimed that the father was made more legitimate as ultrasound vision allowed them to move from vicarious knower to seeing the foetus for himself. In contrast, ultrasound takes away the pregnant woman's privileged access to the experience of pregnancy because it "makes seeing and getting a picture of the foetus at least as significant as carrying the foetus" (Sandelowski, 1994b, p. 242). While not explicitly focused on couple's experiences of ultrasound in pregnancy, Sandelowski's research highlighted some of the key topics that would emerge from others investigations, the importance of the visual image in relation to 'knowing' the foetus, and the site of ultrasound as a collision between the medical and the social. Sadly, not many

other researchers heeded her call for further research to involve talking with couple's together about their experiences.

Within his ethnographic research on the transition to contemporary British fatherhood, Draper (2002) investigated the meaning of ultrasound scans for males in particular by interviewing 18 men with pregnant partners. Interpreting his interview data in relation to concepts of biomedicine, embodiment and visuality, Draper (2002) made some key theoretical advances in relation to the multiple, and possibly conflicting, ways of knowing the foetus. His participants expressed that as men, pregnancy was experienced as a type of 'proxy' embodiment, mediated by their partner's pregnant body, and the ultrasound scan allowed them increased access to knowledge about the foetus. The visual knowledge that ultrasound offered was privileged to the extent that the ultrasound image was conceptualised not merely as being a representation of the foetus but a way for fathers to see their future child, a phenomenon that Draper describes as "a kind of antenatal birth" (p. 790). In line with previous scholars (Sandelowski, 1994a; Taylor, 1998), Draper (2002) also noted the conflict between the medical and the social nature of the ultrasound scan, and the fact that the boundaries between private and public, and present and future are blurred as the social truth of the foetus-as-a-baby precedes the biological truth of its birth and postnatal existence.

Ekelin and her colleagues (Ekelin, et al., 2004) took a grounded theory approach to analyse 22 Swedish couples' thoughts and feelings about ultrasound. Interestingly, while they interviewed both the pregnant women and their partners (all male), they also chose to interview each member of the couple separately (although reasons behind this choice were not given). The research focused on the provision of information by the ultrasound technician and the influence this had on the couple's understanding and enjoyment of the experience. All of the participants bar one understood that ultrasound was a choice, not a compulsory part of antenatal care, and all perceived it as an extremely important part of the process of becoming parents that "the father should be encouraged to participate" in (p. 335). The desire to see the foetal scan

could not be resisted and all of the participants reported not even considering declining the procedure.

Pregnant women's experience within a biomedical event

Much of the research investigating the experience of pregnant women having ultrasound involved combinations of researchers observing ultrasound scans and conducting interviews with both pregnant women and a selection of either physicians, midwives or sonographers. A large proportion of the research was conducted with the intention of examining how ultrasound functioned as a tool of biomedical authority and how pregnant women are placed and experience their pregnancy within this context.

In her examination of ultrasound in pregnancy Georges (1996) focused on the repetitive and intensive use of ultrasound in the public hospital of a small Greek city to investigate the production of authoritative medical knowledge. She observed ultrasound scans, consultations and births, and conducted both informal and structured interviews with obstetricians, nurse-midwives and postpartum women. She also interviewed obstetricians at a private hospital and spent two months in Athens observing ultrasound technician training and interviewing professors. In line with Sandelowski (1994a, 1994b; Sandelowski & Black, 1994), Georges concluded that the extensive use of visual technology demoted women's embodied experience as less significant than the machine-mediated seeing (Georges, 1996). One particular interaction highlighted how physicians may use the ultrasound to cement the authority of their technologically-aided visual knowledge over that of the pregnant woman:

> On her first prenatal visit, this 20-year old girl could not pinpoint the precise date of her last period. The more the doctor asked, the more upset she got and the more exasperated he got at her failure to answer. Finally he told her to follow him to the ultrasound room. When he looked at the ultrasound screen and she asked him what the correct dating of her pregnancy was, instead of answering her he commented, "Now that you're going to be a mother, you have to pay more attention and be more responsible" (Georges, 1996, pp. 167-168).

This anecdote is a potent illustration of how ultrasound could be utilised by medical professionals to exert power over pregnant women and to illustrate that in the hierarchy of knowledge, their medical insight trumps her corporeal experience. Georges later collaborated with Mitchell to compare her Greek data with Mitchell's similar Canadian data from an ultrasound clinic (Mitchell & Georges, 1997). While the authors claim that both drew on observations of ultrasound scans, and on interviews with sonographers, pregnant woman and their partners, there was no mention in Georges original paper on her talking with the partners of the pregnant women, and whether they were present at the ultrasound scans. The purpose of this collaboration was to investigate cultural and historic specificity of ultrasound use and how the meaning of ultrasound is shaped by both local and global discourse and practice. They were particularly interested in Haraway's (Haraway, 1992) conceptualisation of the cyborg – the coupling of human and machine that is necessary to 'know' the foetus. Mitchell and Georges (1997) concluded that the cyborg foetus that emerged with ultrasound technology said more about the cultural, social and historical conditions of its production than any inherent nature of the image itself.

Using a similar methodology of observation of scans and interviews with pregnant women, Taylor (1998) investigated the growing routinisation of ultrasound in North America. As Sandelowski (Sandelowski, 1994a) had noted earlier about the simultaneous medical and social nature of the ultrasound scan, Taylor believed that the event had become a "hybrid practice" (1998, p. 26). She asserted that the boundaries had become blurred between medical procedures and visual entertainment, and as such that there were contradictory processes going on within the examination and within the dissemination and use of foetal ultrasound images in the wider culture.

In their observations and participation in 18 ultrasound scans in a Denmark hospital, Büscher and Jensen (2007) felt (unsurprisingly given Jensen's occupation as an ultrasound scanning nurse) that while both the

pregnant woman, her partner and the medical professional were all looking at the same image, "the expert sees more" (p. 33). With their trained vision sonographers are afforded a huge amount of power in the interpretation of what the image on the screen represents and what that means for pregnant women. In their survey of how 50 sonographers practice their craft, Ruiz and Murphy (1992) recognised that "those of us who perform obstetrical ultrasound examinations are in a highly influential position in which personal motives may dictate the manner in which exams are performed" (p. 273). In speaking with sonographers and reading their publications, Taylor (2002) was struck by their insistence of their professional status as a balancing act between the high level of skill that the technology demands but also their provision of the personal touch to the examination. The sonographers did not want to be defined by the feminine, non-medical, caring aspect of their work as that undermined their status as technical specialists, but they also did not view themselves purely as collectors of data. Evans (2007) described how important the balance was between the technical skill of the sonographer and the increasing functional advances of the ultrasound equipment. Sonographers were charged to embrace and master the technology while still providing the "human element" that patients expected (Evans, 2007, p. 42). These studies emphasised how the sonographers felt their role differed fundamentally from other medical professionals due to the importance of the balance they must maintain between the medical and the social aspects of the ultrasound scan (Sandelowski, 1994a; Taylor, 1998).

In contrast to the view of ultrasound as a tool of biomedical authority, in a study of Dutch midwives in the Netherlands, Rothman (2001) discovered that some medical professionals considered the *process* of pregnancy as equally important as the product. In the Western medical model, the experience of pregnancy has no intrinsic value; if the baby is going to be stillborn or born with a disability, then it is almost constructed as a spoiled pregnancy or time wasted. The Dutch midwives saw pregnancy as a worthwhile experience in and of itself. Even if the pregnancy turned out not to be successful in producing a healthy 'normal' baby, the pregnancy was constructed as being successful in other ways by nurturing

the women and her relationships. This viewpoint renders prenatal 'management' unnecessary because (ironically) for almost all of the conditions that screening can identify, there are no treatments available. So if ultrasound technology only offered the provision of information pregnant women would get eventually anyway, why risk spoiling the experience of pregnancy itself (Rothman, 2001)? This non-biomedical worldview has little in common with the dominant view of pregnancy as merely a step in attaining the goal of making a baby.

Ultrasound research around the world

While the predominant proportion of early social science research focused on women's experiences within North America or the United Kingdom, as access to ultrasound technology spread around the globe in the last decade, so did interest in the way the technology is utilised and understood in other countries.

Studies that reported positive findings of women's understanding and expectations of ultrasound often employed quantitative survey designs where responses were measured with closed questions. For example, in a Danish survey of women's experiences items included, 'whether the ultrasound has made you more secure, more insecure or no difference' and 'rate your overall impression of the event on a scale of 0 (bad) to 10 (good)'(Larsen, Nguyen, Munk, Svendsen, & Teisner, 2000). In surveys of Chinese women's knowledge items included, 'ultrasound is safe for foetuses', true, false, or don't know (Chan, et al., 2008). As a measure of maternal-foetal bonding given to American and Korean women items included, 'Did you share your ultrasound pictures with other people? If yes, how many?' (Ji, et al., 2005), and for Irish women maternal-foetal bonding items included, 'Are you more attached after the scan? Yes or No'. (Lalor & Devane, 2007). These studies fail to enlighten the reader about how meaning is constructed and negotiated within the context of the ultrasound. These types of questions do not help researchers explore how women understand the ultrasound examination and how this understanding influences their experience.

However, some qualitative research has aimed to understand women's experiences of ultrasound in the 21st Century. Referencing earlier feminist theorists, Jonsson (2007) sought to explore how the differing perspectives of

parents-to-be and midwives were negotiated during the ultrasound examination. Jonsson observed 12 ultrasound scans in a Swedish hospital and found that there was constant tension between the parents' 'everyday' perspective of the ultrasound image as a picture of their expected baby and the midwives' 'professional' perspective of the image as a diagnostic tool. A large part of the midwives' job was to translate the image from one perspective to the other, essentially telling the prospective parents how and what they should see (Jonsson, 2007). These findings are in line with Sandelowski (1994a) and Taylor's (1998) investigations into the 'hybrid' nature of the ultrasound scan, as both a medical and a social procedure. In looking at the increasingly routine use of ultrasound in Sweden, Molander, Alehagen, and Bertero (2010) reported that the 10 Swedish women they interviewed viewed the scan as "an opportunity to do what everybody else does" and some would have felt very disappointed if deprived of this particular cog in the process of "normal pregnancy" (Molander, et al., 2010, p. 24).

As ultrasound technology became increasingly available in more countries, researchers investigated what had driven its growing popularity and routinisation. In Israel, Ivry (2009) attended ten 'pregnancy events' where sometimes up to 500 pregnant women and their partners could come and listen to lectures given by prominent doctors recognised as ultrasound experts. Ivry carried out this ethnographic research in order to analyse the cultural specificity of ultrasound understandings and the influences of local reproductive politics in contrast to dominant Euro-American understandings in the pervading ultrasound literature. He found that the presenters reinforced biomedical authority by reminding the audience of pregnant women's reliance on the sonographer to understand the ultrasound encounter. One Israeli obstetrician illustrated this particularly well by joking, "Why do pregnant women have two eyes? One eye is to observe the ultrasound screen, and the other is to look at the doctor to see if everything is OK" (Ivry, 2009, p. 191). By constantly locating their presentations in the realm of foetal deformity and abnormality, these Israeli medical experts hosted "horrific ultrasonic shows" (Ivry, 2009, p. 195) to emphasise that the technology they granted women access to could decrease the

likelihood of them having to live with the result of nature making a serious mistake with their expected child.

Other studies undertaken in developing countries found similar preoccupations with 'normality' as Ivry noted in his 'pregnancy event' observations. In countries such as Syria (Bashour, Hafez, & Abdulsalam, 2005) and Vietnam (Gammeltoft & Nguyen, 2007), women were having far more scans than is normally deemed necessary by Western standards. Due to physicians' encouragment, women were uncritically accepting these multiple scans as medically recommended. The physicians never acknowledged their overuse of ultrasound, and both sets of authors believed that they prescribed excessive amounts of scans as a means to attract more revenue, regardless of whether they were a public or private practice. In both Syrian and Vietnamese locations, researchers found that women lacked information about the reasons for having an ultrasound and could not accurately judge the value of what the scan told them. Indeed, one of the Vietnamese participants reported that during the ultrasound procedure "the doctors only move the machine and read the result. They do not say or explain anything" (Gammeltoft & Nguyen, 2007, p. 169).

Reclaiming women's embodied pregnancy experience

In contrast to the literature reporting that seeing the foetus sidelined women's experiential knowledge (Harris, et al., 2003), there is research to suggest that women do not passively accept biomedical interpretations of their bodily state, but embrace ultrasound technology as a means to reassert their embodied experience. Root and Browner (2001) found that the 158 pregnant women they interviewed often unwittingly solicited biomedical information from their physicians to endorse the experiential knowledge they derived from their own bodies. They subsequently posited a spectrum of compliance and resistance by women during the scans, with absolute compliance at one end and absolute resistance on the other. They suggested that what constitutes 'knowledge' (biomedical, experiential or a combination of both) is in constant flux depending on the women's needs; the context in which it is practiced gives the particular knowledge power and meaning. Rudolfsdottir (2000) found that the 10 Icelandic women she interviewed were both appreciative and critical of the positions

allowed them within the medical discourse of pregnancy. While valuing the technological innovation of ultrasounds, the pregnant women found it problematic when they felt that their authority over their own bodies was being questioned or removed. They challenged biomedical knowledge by refusing to accept that pregnancy represented an abnormal medical condition and re-interpreted their medically described hormonal-induced 'unstable moods' in a positive way. These interview studies offer examples of women's empowerment in relation to the technology, and therefore provide alternative views to much of the previous literature which interpreted women's experience of ultrasound as suppressive and alienating.

As ultrasound technology progressed from 2D to 3D and 4D imagery, research has begun to explore the competing medical/social natures of ultrasound within the more complicated context of commercial, non-diagnostic ultrasound. This was becoming increasingly available in North America and parts of Europe throughout the first decade of the 21st Century. Roberts (née Palmer, 2009a; Roberts, 2011) observed 25 3D and 4D scans in three commercial ultrasound studios in the United Kingdom and found that with the increased clarity of these images, women's internal body parts were more obvious in the foetal image. It was therefore necessary for sonographers to explain the presence of the placenta and umbilical cord and Roberts concluded that this presented an opportunity for women's subjective experience to be woven back into the narration of the image and the pregnancy in general (Palmer, 2009a). She also noted that with these commercial 3D and 4D viewing sessions, the social nature of the scan took precedence over the medical aspects. Women and their partners were paying clients, not patients. Roberts found that rather than the sonographer having primary claim to knowledge of what the image was, the pregnant women collaborated by actively translating the image on the screen to make sense within their embodied experience and promoted this image-body connection with their partners too (Roberts, 2011). Both the pregnant women and their partners partook in transforming the image into 'our baby' by linking the visualized foetus with appearances, personalities and behaviours of already existing family members. Kroløkke (2011) made similar conclusions in her observations of 70 ultrasound scans in 3D clinics in both Denmark and the USA. She found that the

new clarity of the 3D images made the scan a highly social event where the 'clients' play a large part in narrating the image into their child-to-be (Kroløkke, 2011). Kroløkke (2010, 2011) is also one of the first scholars to identify the performative nature of the event in terms of the pregnant woman and her partner performing their new roles as mother and father and the ability of non-diagnostic commercial ultrasound to act as an elective service which they can consume as part of this performance.

Conclusion

This chapter introduced ultrasound and the biomedical context within which the technology has grown. I reviewed social science research into the use of ultrasound in pregnancy, from early feminist responses to the technology, to qualitative and quantitative research focusing on pregnant women and sometimes (although seldom) their partners, and the sonographers. Many studies involved either observation of the ultrasound examination, interviews with pregnant women or medical personnel or a combination of both procedures. While researchers have been interested in the ultrasound experience, much of the work in this field is not adequately theorised. In order to understand how ultrasound is experienced and what ultrasound means to pregnant couples we need to consider the underlying assumptions that help shape this type of research. What is the context within which ultrasound is embedded? How do people understand what it is to 'know' the foetus? How do they understand reproductive technology in general? And how do pregnant couples understand their position in relation to the 'choice' they have to access technology in order to get an early view of their child? These concepts will be discussed in depth in the next chapter.

Theoretical Framework: Developing a Beneficial Lens Through Which to View Ultrasound Research

As documented in Chapter 1, there has been widespread research into the use of ultrasound in pregnancy with various participants and using different methodologies, however the field has been relatively under theorised. In this chapter I will discuss three theoretical lenses that inform this field and which will provide a beneficial foundation of research into ultrasound in pregnancy. First, acknowledgement of vision as a primary sense of experience, which grants privilege to visual information as a way of knowing. Second, the conception of a biomedically-fuelled technological imperative, which drives and is driven by popular beliefs about science, progress and technological innovation. And third, consideration of how notions of consumption and choice intersect in popular constructions of how personal identity is defined in relation to being a worthwhile member of society. These theoretical lenses are particularly important given the increasing commercialisation of ultrasound technology and the growing 'social' scanning industry that is firmly established in larger countries and beginning to present itself in New Zealand. After outlining these theoretical lenses I will discuss how they come together in the field of research into ultrasound in pregnancy and have implications for pregnant women and their partners' experience of pregnancy and 'expectant parenthood'.

Primacy of the Visual – the Techno-visual Birth of the Foetus

Ultrasound technology exists in a world where to see is not only to believe, it is to know. The centrality of vision in our day-to-day lives has to be taken into account when 'looking at' the meaning of ultrasound technology (Lister & Wells, 2001). Vision has become conflated with knowledge (Jenks, 1995; Palmer, 2009b), so that which can be objectively observed is more 'factual' than that which can only be alluded to. In his discussion on how vision is "lionised among the senses", Jenks (1995, p. 1) highlights how common conversational appeals like 'do you see what I mean?' and 'what are your views?' are embedded in the implicit

assumption that we conceptualise looking, seeing and knowing as equal. Thus, ultrasound technology is an integral part of an increasingly visualised world where the "prevalence of the gaze" (Petchesky, 1987, p. 275) leads to the privileging of vision as the primary means of knowing the world. In this sense, the ultimate 'proof' of pregnancy can be seen (known) in the visual representation of the foetus which is provided by ultrasound technology. This image acts as an 'objective' and 'truthful' instrument for the evidence of a pregnancy (Reventlow, Hvas, & Malterud, 2006; G. Rose, 2007).

An image's audience is fundamental to its effect (G. Rose, 2005). Who the viewers are, their relationships and subjectivities, all play a role in the way in which they make meaning of the ultrasound scan image. The privileging of visual information in this realm means that audiences may 'read' the ultrasound image as a means of bringing the foetus to life. In this way, the image provides a 'techno-visual birth' of the foetus before its literal birth. This techno-visual birth is shared with others, as ultrasound images are made into a public display – stuck on the fridge, emailed around colleagues and family, or exhibited on social networking sites like Facebook. Indeed the advent of new technologies means that the image can reach a much wider audience. For example, the Great Connections' 'Mobile Baby' application for the iphone enables people to send still images or 'video-clips' from the ultrasound scan as a text message or an email (to everyone in your contacts list). This "application is compatible with any ultrasound machine and any mobile device" (Merino, 2011).

As they interpret the ultrasound image of the foetus, the audience have been said to narrate foetal personhood into being (Mitchell, 2001). The foetus's position and movements are constructed as deliberate actions of a confirmed ready-made human. If the mouth is open it is 'smiling' or 'hiccupping', if closed it is perhaps 'swallowing'. If the hand is near the mouth then it is most definitely 'sucking its thumb' or if the arm is up near the side of the head it is 'scratching its ear' (Sandelowski, 1994a). Once personhood is assigned to the foetus, a natural progression is to endow its actions with deliberate intent. If the sonographer is having trouble locating a 'good picture' of the foetus then it is considered to be 'shy' and therefore 'hiding' from its audience (Roberts, 2011). If obtaining a clear

image requires little manipulation on the part of the sonographer then this can be interpreted as the foetus 'showing off' for their appreciative audience. Another process of personification available to the audience is that of assigning gender. Once 'it' becomes 'he' or 'she', it becomes even easier for the audience to construct this new foetal person in terms of his or her potential (Franklin, 1991; Rothman, 2010). Images of female foetuses are converted to 'baby girls' whose developmental potential is constructed within gender norm boundaries exemplifying her 'cuteness' and how 'pretty' she is going to be. Male foetuses become 'wee boys' who look so 'strong' in their movements and must be destined to be sports stars (Kroløkke, 2011; Roberts, 2011).

Putting the images to work by interpreting them not as merely a representation of the foetus at a particular time, but as a 'real' insight into the 'potential citizen' residing inside the pregnant woman's stomach, fast-forwards the reality of the foetus (Büscher & Jensen, 2007; Dumit & Davis-Floyd, 1998) and re-creates the foetus as a tangible being who acts with intent and partakes in the social world, a verifiable member of the public (Büscher & Jensen, 2007). The abstract form on the screen becomes a social entity; the initial image of sound-wave echoes becomes 'a baby' (Rothman, 2010). Seen (known) in this light, the ultrasound scan becomes a chance, not to simply observe the foetus, but to "meet the baby" (Mitchell & Georges, 1997, p. 397).

As the visualising technology has progressed from 2D to 4D and the image has become more accessible to the non-expert viewer, a diverse range of commentators have looked at the growing use of, and demand for, non-diagnostic or non-medical ultrasound, where the scan has no medical necessity but is performed at the request (or assumed desire) of the pregnant woman and her partner to see their baby; from legal representatives looking at regulation of the technology (Uhles, 2007), to medical professionals lamenting the "trivialisation" of ultrasound "jeopardising the integrity" of their profession (Sullivan, 2002, p. 211), and journalists recording their personal experience of invading "the last true privacy our daughter would ever know" (Lambert, 2006). While women and their partners may previously have had to cede authority to the

technological expert in matters of anatomical identification with 2D ultrasound, by contrast with newer 3D and 4D ultrasound technology, the contours and shadows in these images render the foetal body more immediately recognisable. The 3D ultrasound image, printed off or supplied digitally, almost functions as a certificate for the pregnant women to the proof of her "provisionally certified-normal foetus" (Taylor, 1998, p. 24) that can represent the start of the family photo album. The increasing clarity of 3D ultrasound and the 'real-time' tracking of 4D ultrasound "imparts a feeling of 'nowness' that promotes a sense of immediate contact with the foetus on the screen" (Mitchell & Georges, 1997, p. 390). This immediacy enhances the feeling that the foetus is performing, especially for those present. And in this performance the foetus is sending a message to those who ultimately decide if its potential existence is realised. As the foetus is imbued with personhood it begins to be afforded human rights, the most important of which, in its current liminal state, is the right to life (Zechmeister, 2001). The individual foetus becomes an unborn child who is considered already part of the population and therefore all the rights that living human children should enjoy are bestowed upon them (Firth, 2009).

That the 'seen' foetus is equivalent to a viable human being is further suggested by 3D ultrasound companies which advertise their services by displaying 'before' and 'after' (birth) photographs. Creating meanings of the technology and the foetus in these ways suggests that giving birth is merely giving the baby the makeover it needs to go from 'foetus' to 'member of society'. These 'before' and 'after' photographs, reminiscent of so many reality television makeover shows, have led to online competitions. For example, one Washington-based 3D ultrasound suite Baby Pictures Ultrasound (www.babypicturesultrasound.com) advertises an "Ultrasound Photo Contest" where couples can send in their 'before' (ultrasound 'photo') and 'after' (baby picture) images and a "third party will decide which photos have the closest likeness". Such a competition seems to construct the 'best' babies as those who manage to look as similar as possible to their previous foetal likeness. Additionally, the 'best' parents

as those who seemingly manage not to detrimentally alter their baby in such a way as to intervene in the fulfilment of potential that the ultrasound image promised. The ultimate 'winner' in this scenario is of course the ultrasound company running the competition, as the winning photos feature in their advertising campaign. The primary purpose of 'before' and 'after' photographs is to prove the worth of 3D ultrasound imaging. The likeness of the 3D ultrasound 'photo' to the eventual baby suggests to pregnant couples that by partaking in the visualising technology they will get to see their actual baby, not just a representation of it.

To see is a socially and historically situated process. Certain ways of seeing are constructed as better, more truthful and afforded more power over alternate ways of seeing and knowing the world. If vision is highest in the hierarchy of knowledge, then those people and institutions with the ability to see more than others can be granted higher status and dominance over how the world is seen (G. Rose, 2007). In the biomedical context, if a picture is worth a thousand words, a doctor can bypass your subjective interpretation and look for themselves at the inner-workings of your anatomy. Indeed the radiologists' maxim 'one look is worth a thousand listens' exemplifies biomedicine's underlying assumption that the patients' description of their experience is subordinate to what an expert can see thanks to the latest visualising technologies (Gunderman, 2005).

The Technological Imperative

The privileging of the visual within a biomedical ideology of progress allowed for the creation of a technological imperative (Dumit & Davis-Floyd, 1998). This is sustained by the assumption that nature is imperfect, therefore any natural process that can be recreated technologically – with flaws fixed and imperfections erased – is, by definition, better (Dumit & Davis-Floyd, 1998). Reynolds (1991) describes this as the 'one-two punch of technocracy', where punch one is to 'prove' with technology that a natural process is deficient, dangerous or dysfunctional, while punch two is to construct newer, more high-tech "next-generation technology" (General Electric, 2003) as a solution to the problem (which was created by technology in the first place). In this way, the

imaging technology of ultrasound is constructed as an essential, commonsense activity for the pregnant woman to engage in if she 'really' wants to know what is happening inside her womb. If the technology exists to objectively check and confirm the state of pregnancy and the health of the foetus then why wouldn't one look?

Biomedical visualising technology is constructed as a means of progress, as it allows objective and reliable access to see that which cannot be seen by the naked eye (Barker, 1998; Conrad, 2009). The language used by many 3D/4D ultrasound companies in online descriptions of their services reinforces this technology-as-progress ideology. The companies appeal to the commanding technological imperative discourse by offering access to: "top-of-the-line" ("Adorable Baby Ultrasound", n.d., para 1), "state-of-the-art" ("What's Kickin'", n.d., para 1.) "cutting-edge" ("Meet the Baby", n.d., para 1) technology; offering the "most advanced technology available" ("Sneak a Peek", n.d., para 3.), and "the gold standard in 3D/4D ultrasound" ("3D Baby Vu", n.d.). In terms of theatres from which to "watch your baby perform for you" ("What's Kickin'", n.d., para 5.), pregnant couples are offered "the ultimate viewing experience" ("Sneak a Peek", n.d., para 1.). Descriptions from commercial ultrasound services highlight how companies draw upon the notions of a technological imperative and visual primacy, to construct ultrasound as an indispensable part of 'doing pregnancy' for modern pregnant women and their partners.

When pregnancy is constructed as a risky state for both for the pregnant woman and for her foetus, then in the name of progress 'innovative' visualising technologies are constructed as the solution for women's "quest for reassurance" (Carolan, 2008, p. 655). Technology has become such a cultural necessity that "there is no personal escape from the apparatus which has mechanised and standardised the world. It is a rational apparatus, combining upmost expediency with upmost convenience, saving time and energy, anticipating consequences and adapting all means to the end." (Marcuse, 1998, p. 46). With technology constructed as providing a 'rational' and 'universal' way to prevent unwanted outcomes, there is a strong moral injunction to access the best available specialised technical knowledge, because "to question the role of technology, it's

appropriateness or the frequency with which it is used…would suggest that the safety of the baby was something that could be compromised" (Burton-Jeangros, 2011; McAra-Couper, Jones, & Smythe, 2012, p. 93). Being 'good' parents means taking personal responsibility for limiting health risks for yourself, and of greater moral importance, for your child-to-be.

Consumption and Choice

Ultrasound technology serves to increase medical authority by giving health professionals access to images that are unobtainable to the pregnant woman and require 'expert' interpretation (Barker, 1998; Mol & Law, 2007). However, the increased clarity of 3D and 4D image to the untrained eye has assisted ultrasound examinations to move from the medical to the commercial domain (Wadephul, Jomeen, & Glover, 2009). When access to visual information means access to 'truer' knowledge, and the technology that grants visual access to the foetus is becoming more and more accessible to the 'general' population: "the public's right to know becomes the public's right to see" (Frosh, 2001, p. 47; see also Palmer, 2009b).

Commercial ultrasound scans present a challenge to biomedical authority over the processes of pregnancy. As one obstetrician protested to Taylor (1998, p. 29): "To us this is a deadly serious medical procedure, but to them it's a form of entertainment…We go through very rigorous training to do this, and then patients come in and after one minute they think they know!" Debate rages about the safety and necessity of non-diagnostic, consumer-driven ultrasound in terms of the ownership of the knowledge gained from the technologically gathered images (Raucher, 2009), the possible as-yet-unknown long-term effects of extended ultrasound exposure (Paul & Nawrocki, 1993; Rawe, 2005), and the differing expectations between 'practitioner' and 'patient/paying client' of what the scan involves and what can be concluded from the image (Koller, 2011; Lambert, 2006; Sullivan, 2002). With the progression of the technology and the advent of commercial ultrasound services, the border between medical process and social event has become blurred so that ultrasound now resembles a "hybrid practice" (Draper, 2002; Taylor, 1998, p. 25). The multiple meanings that these

different, perhaps conflicting, perspectives and expectations make of the scan require negotiation between consumers and service providers.

Many people hold the belief that the fundamental feature of being an autonomous individual, and a defining characteristic of a functioning human being is having the right exercise freewill by choosing between a variety of options (Gregg, 1995; N. Rose, 1999). In many Western countries, the way that this presumed entitlement to personal agency is embodied and played out in the social world has become entwined with the right-to-consume (Kroløkke, 2010). The construction of a personal neo-liberal identity involves notions of choice and rational autonomy that have been put to work to produce an ideal of the contemporary individual, not as a citizen, but as a 'consumer' (Brown & Webster, 2004; Bryson, 2011). Within a neoliberal society where people are expected to produce their selves and identities through ongoing consumption practices (N. Rose, 1999), ultrasound visual technologies are simply another service through which pregnant couples can exercise their right to express themselves and their baby-to-be.

The proliferation of commercial, consumer-driven ultrasound services is both a consequence and supporting feature of a discourse that constructs consumption-as-choice. Pregnant women do not need a doctor's referral to access emerging, non-diagnostic ultrasound businesses to see "how your baby actually looks" ("Early View", n.d., para 7.), they simply need the money. Ultrasound services in America, Canada, the UK and Australia offer 'Super-Duper-Ultra', 'Premium' and 'Elite' packages ranging from the equivalent of $200-$300 New Zealand dollars. Or you could sneak a peek with packages labelled 'Born to be a Star', '4D Little Star' or the 'Miracle of Life' for $150-$300 New Zealand dollars. These package deals usually include a combination of 2D and 3D photos, in black and white and 'colour' (usually a sepia tone), as well as a 4D DVD 'movie' accompanied with the parents' choice of music. Some include stuffed toys such as 'teddy heartbeats' onto which the sonographer makes a recording of the foetal heartbeat. There are also options of key-rings, mugs, and mouse-pads featuring the foetal image, and during the scan there is comfortable seating, catering and an endless supply of tissues for the audience (Rawe, 2005). It is ironic that many of these sites

advertise the ultrasound as “truly a once in a lifetime” (“1800 Sonogram”, n.d., para 1) or (slightly more honestly) a “few in a lifetime” (“3D baby Vision”, n.d., para 2.) experience while simultaneously offering discounts for repeat customers.

Many of these commercial non-diagnostic ultrasound packages thrive on what Pine and Gilmore (1998) call ‘the experience economy’. Instead of selling merely the service of an ultrasound scan they have transitioned to selling individualised, personal experiences where “clients arrive to the clinic as pregnant and depart as parents” (Kroløkke, 2011, p. 26). With a consumer-driven culture that demands “whole new genres of experience”, the ultrasound exam room becomes a stage and the ultrasound technology becomes a prop used to “engage individual customers in a way that creates a memorable event (Pine & Gilmore, 1998, p. 98). The growing acceptance and demand for these commercial, non-diagnostic ultrasound services and their increasingly promoted extras is both a driving force behind, and a consequence of an understanding that exercising choice is performed through consumption.

In summary, pregnant couples’ “insatiable appetite for ultrasound images of their babies” (Rawe, 2005) is created and sustained through discourses of the primacy of visual information, the technological imperative and the freedom of choice and accompanying right-to-consume. When the right-to-know is translated into not just the right-to-see, but also the right-to-consume, these ultrasound businesses have picked up on the shift from patient to consumer and offer a solution for women’s “craving for an ultrasound fix” (Sandelowski, 1994a, p. 274). No longer the privileged zone of biomedicine, non-diagnostic 2D/3D/4D ultrasound is available to anyone who can afford it. Even those who cannot afford visual access to the foetus themselves still have the opportunity to consume the technology with some companies, such as Unique Ultrasounds (www.uniqueultrasound.com), offering an ‘ultrasound registry’ where others can donate by credit card to collectively purchase whatever package they desire on behalf of the pregnant couple.

Implications for 'Parents-to-Be'.

The three lenses discussed in the previous section have a number of consequences for our understandings of, and meanings around, the provision and outcomes of commercial ultrasound services. Firstly, within the discourse of visual primacy, seeing the foetus is understood as equivalent to knowing the foetus, while secondly, the technological imperative means that if the technology exists to enhance our ability to see (know) the foetus then we are obliged to utilise this better vision. Thirdly, when people understand their apparently fundamental freedom to choose as a right to consume the 'newest and latest' visualising technologies, then paying to partake in commercial ultrasound scans becomes a way for pregnant women and their partners to position themselves within this social world as morally-upright, responsible consumers who are beginning to perform the appropriate tasks of their impending parenthood. Sharing this performance (via images and videos of the scan itself) ensures that everyone is aware of their new status as a bona fide family. In combination, these discourses are powerful in imbuing the foetal ultrasound image with a "visually iconic status" (Franklin & Roberts, 2002 as cited in Brown & Webster, 2004), highly charged with meanings of personhood, family values, the potential of science, human survival and progress, the promise of the future and 'Life Itself' (Ettorre & Kingdon, 2010). Understood in this way, it is "no wonder we look" (Haraway, 1997, p. 179). The three lenses also work together to produce particular implications for the pregnant woman and parents-to-be in ways that while seemingly offering them more choices, appear to actually limit their possibilities for choice in utilising commercial ultrasound services.

Women's agency

As feminist scholars have cogently argued, ultrasound technology creates a focus on the foetus as the 'product' of pregnancy, and this means that the woman's experience – or the 'process' of pregnancy – is de-emphasised (Gregg, 1995; Kitzinger, 1998; Rothman, 1985, 2001). Indeed more credence is given to the visual image of the foetus, the scientific fact made public, than the actual 'real-life' pregnant woman who is present in the examination (Duden, 1992; Gross & Pattison, 2007).

The image created by 3D ultrasound renders the woman with the expanding womb transparent and, at times, invisible. The progress of the technology means that the internal anatomy of the pregnant woman (e.g. placenta and umbilical cord) that is visualised concurrently with the foetus can be erased by sonographers to allow a 'good view' of the baby-to-be (Palmer, 2009a). As Boucher's (2004) analysis of the 'educational' video '*Ultrasound: a window to the womb'* demonstrated, there is little suggestion of the woman's muscle tissues and organs in images of the interior of her body. Rather all that space is described as the foetus's "living quarters" or "private playground" (Boucher, 2004, p. 17). The pregnant woman herself has variously been described as "the carrier, host" or foetal environment (Rothman, 2001, p. 184) and "little more than an incubator in which the foetus resides" (Boucher, 2004, p. 17). Her body becomes a "barrier" (Rothman, 2001, p. 184) which visualising technologies must gain access through in order to service the life inside (Michaels, 1999). Further, women no longer have "privileged access" to the foetus (Sandelowski, 1994b, p. 239), instead during an ultrasound examination they are "placed in the bizarre position of looking at themselves inside out and from a distance" (Sandelowski, 1994b, p. 239) as "both host and visitor…both body and media" (Kroløkke, 2010, p. 148). The pregnant women's personal embodied experience is trumped by the visual, public and technologically expressed experience.

While critiques of ultrasound technology maintain that visual technologies increase the focus on the foetus and thereby subordinate women's personal experience of their pregnancy, currently the growing popularity for commercial non-diagnostic ultrasound suggests that women actively seek technological involvement in their pregnancy (Palmer, 2009a; Petchesky, 1987). Research suggests that women use the process of having a commercial ultrasound scan to actively embed their own pregnancy experience into the interpretation of the image. Mitchell and Georges (1997) found that the clearer imaging of 3D ultrasound provided their Greek and Canadian women participants with the ability to contribute more social meaning to the image compared to 2D ultrasound images, and to use the ultrasound examination to assert authority over their bodies. Similarly, in their observations of ultrasound examinations, both Nishizaka (2010) in Japan and Roberts (2011) in the UK discovered that

women took opportunities to map the images of the inside of their womb, separated from themselves and shown from afar, back onto their bodies. Rather than simply accepting the up-right, magnified image as a given, women would intervene in the sonographers' narration of what was on the screen to (re)locate where the foetus was positioned in their abdomen and how that connected with their bodily experiences up to that point. Roberts (2011) also found that parents engaged in what she labelled 'collaborative coding' in conjunction with the sonographers. While previously sonographers imbued the foetal image with social meaning, 3D and 4D ultrasound images seem to allow pregnant women and their partners greater ownership of the interpretation by, for example, stating the similarity of the foetal features to those of family members and thereby making the image personally meaningful. 3D ultrasound images allow pregnant couples to take the generic baby offered by the sonographers' interpretation and personalise it by seeing in the image specific familial features that transform it into "our baby" (Kroløkke, 2011; Roberts, 2011, p. 13). In these ways, commercial 3D/4D ultrasound services may be viewed as a site where pregnant women are actively inscribing their embodied experience onto the visual outputs, while women, their partners and other family members are ascribing the foetal image with familial meaning.

Coming from a feminist critique of ultrasound technology, women are not merely passive vessels and medical technologies don't have to simply reconfirm biomedical dominance; women actively seeking out and interacting with ultrasound technology can deconstruct biomedical authority (Brown & Webster, 2004). Women may embrace technological interventions into their pregnancy for a complex set of reasons, some of which may work to increase feelings of pregnant embodiment and empowerment of their situation and identity (Crossley, 2007). It is possible that instead of understanding ultrasound as something that makes women disappear, they may be actively appropriating ultrasound visual technologies to re-define pregnancy experience on their own terms (Firth, 2009). It is important to understand that choice is not an innocent term, and there are complex sets of circumstances that are involved in women's 'choosing' to partake in consuming ultrasound technology.

> "Women live with ambiguity, pursue self-determination, and make choices within the contradictions, constraints and contexts of their lives. In addition to illuminating the multiple and interwoven factors involved in women's ways of choosing, their stories illustrate the ambiguous, paradoxical character of choice itself: choice is socially constructed and constrained, and, simultaneously, personally and individually experienced." (Gregg, 1995, p. 133)

Performing parenthood

With the advent of progressively faster broadband Internet connectivity and wireless mobile technology there is nowhere "across town, across the country or across the globe" ("Sonostream Live", n.d., para 4.) that is exempt from viewing the ultrasound performance. There are now the options to "Skype your ultrasound!" ("Unique Ultrasounds", n.d., para 4), invite guests to a "live internet broadcast" ("3D Miracles", n.d., para 6.) or they could watch it via 'Sonoview on demand' for up to two weeks following the scan ("Baby's First Images", n.d., para 2.). Many of the packages advertised on 3D/4D ultrasound websites also offer some form of "online customised baby website for hosting digital pictures, video files and for posting your registry" ("4D Fetal Imagaing", n.d., para 3.). All of these add-ons serve to ensure that pregnant couples can let the maximum amount of people know that they are actively involving themselves with the available visualising technologies in relation to their pregnancy. They are performing in accordance with the expectations of a consumer culture that values vision as knowledge and technology as progress, and therefore 3D/4D ultrasound as confirmation of the foetus as 'baby' and the pregnant woman and her partner as 'parents-to-be'. A pregnant couple are required not only to *appear* pregnant (with the woman's ever expanding body), but also to *express* themselves as pregnant through "engaging with the medicalisation processes" so as to represent themselves "as in tune with the mood of the times" (Nicolson, et al., 2010, p. 583)

In her analysis of American and Danish 3D/4D ultrasound marketing websites, Kroløkke (2010) noted that performing pregnancy as a way to publicise impending parenthood is "intricately tied to consumption choices" (p. 142). Not

only does the ultrasound make the baby, but it also makes parents. If the ultimate goal is to obtain the best quality (healthy) baby then pregnant women and their partners must show the social world that they are working hard to secure the perfect product of their pregnancy (Petchesky, 1987; Rothman, 1985, 2001). Kroløkke (2010, 2011) interprets these websites not as just selling the possibility of seeing the baby, but selling an 'emotionally transformative experience' where pregnant women become mothers, their partners' become fathers, and together with the foetal image, they become a family. The ultrasound experience is a site for identity transformation and the "primary performative arena" (Taylor, 2000a, p. 154) for parents-to-be to demonstrate their talents and rehearse their roles in this new position. They are not passive recipients of the experience but are actors in the meaning-making process, the ultrasound exam serves as a site where they may reiterate the conventions of their specific historical and cultural setting and be materialized as 'responsible parents' (Kroløkke, 2011).

'Choice' and the making of 'responsible' parents-to-be

Reproductive technologies are born out of, and invested with, extremely powerful values of what constitutes good parenting and of "reproduction as *the* defining feature of adulthood" (Brown & Webster, 2004, p. 61). Young girls learn of their potential as mothers from a young age and are socialised with the understanding that 'good' women are 'good' mothers (Gregg, 1995). The existence of reproductive technologies such as ultrasound, offer the possibility to extend the understanding of 'good mother' to include 'good producer' (Hanmer, 1987). As author Ann Enright lamented during her experience of pregnancy,

> "There is this overwhelming sense that no matter how properly we reproduce, we are all DOING SOMETHING WRONG! and no one knows what it is. All babies are perfect. They are given to us so that we can wreck them in some tiny but catastrophic way" (Enright, 2004, p. 106)

When pregnancy is constructed within the biomedical understanding of risk, parents-to-be are therefore constructed as having the responsibility of protecting their 'baby's right to be perfect' (Hanmer, 1987) by engaging in behaviours that will maximise it's potential perfection (Lupton, 1999). The promise of a

technologically-guaranteed strive for perfection is seductive, at the same time as it limits agency by exerting pressure to conform to moral expectations (Brown & Webster, 2004; Lupton, 1999). The foreboding presence of risk surrounding understandings of pregnancy works to secure the technological imperative and create a self-fulfilling prophecy where contemporary parents-to-be actively seek out reproductive technologies to gain reassurance of foetal health (Carolan, 2008), because choosing not to may be understood as unethical, irresponsible and altogether incomprehensible (Molander, et al., 2010; Sandelowski, 1994a). Pregnant women and their partners are simultaneously positioned as having the choice – and carrying the responsibility to choose – to consume the 'latest and greatest' ultrasound scans throughout their pregnancy. This is an example of Gregg's (1995) and Harpel's (2008) 'paradox of choice' where "women believe they are given choices about the use of prenatal technology; when, in actuality, the choice is imposed on them by the availability of the technology" (Harpel, 2008, p. 305). In a market-based economy it is hard for 'responsible' parents to escape that every aspect of their pregnancy experience can be commodified, have a price attached to it, and supposedly be 'rationally' considered in terms of costs and benefits (Gregg, 1995). A further paradox exists in that as the "realm of risk is expanded" with technological advances, there is an "interpretive lag" between what can be detected by the visualising technology of ultrasound and the ability the biomedical community has to actually treat what is revealed (Carolan, 2008, p. 655; see also Rothman, 2001).

The Current Research: Looking Through an Integrated Theoretical Lens

Despite the wide range of research done on the use of ultrasound in pregnancy, many of the studies reviewed in chapter one of this thesis fail to explicitly identify some (or any) of the three possible underlying lenses outlined in this chapter that could influence how pregnant women and their partners make meaning of ultrasound technology. These lenses provide valuable ways of looking at the field, especially as the technology becomes increasingly commodified, and as such it is crucial to take them into consideration.

When conducting research within the context of pregnancy and reproduction it is imperative not to simply view pregnant women as casualties of biomedical

institutions, technologies and practices. Instead of being reduced to the passive 'consequences' of power, feminist research aims to explore how women and their partners challenge the distribution of power in the reproductive context. Ultrasound examinations are social, collective events and their meaning for those involved and the meaning of the images produced are constructed through the *interaction* of the ultrasound technician, the pregnant woman, her companion and any other viewers granted access, as well as shared local and broader societal understandings (Kroløkke, 2011; Mitchell, 2001). As pregnant couples talk about their ultrasound they collaboratively construct knowledge about, and the meaning of, their particular experience.

Socially constructed knowledge is usually purpose-built for the context within which it makes an appearance (Edley, 2001), and in talking about their experience, the pregnant couples both contribute to and are enmeshed in discourses that produce them as particular 'selves'. Thus it is important to talk to the couples together about their experiences, rather than just the pregnant woman or with both separately, as most of the previous research has done, in order to obtain shared meanings of their experience with ultrasound. The ultrasound scan may have multiple meanings for the pregnant woman and her partner, talking with them together offers them a chance to construct what the experience meant to them individually and as a unit (Peters, et al., 2008). The three particular lenses I have identified can also influence how we think about researching what ultrasound means to pregnant couples by suggesting that as well as interviewing them together, it is also important to explore the actual images that they saw during their experience. By asking the pregnant couples to show and talk about the images that they received from their ultrasound experience it is possible to explore the ways in which they interacted with the image and its meaning within the ultrasound and subsequent experience.

New Zealand is unique as a country in which to research this topic because we have yet to see the level of commercialisation of ultrasound services as is advertised in larger northern hemisphere countries. While we do have the 3D and 4D technology, it is not as widely known of here, and those places that do offer the service do not offer the extras that are so indicative of the full

experience of 'keepsake' or 'entertainment' ultrasounds overseas. However there is routine use of 2D ultrasound in New Zealand. The two most common scans include a 'Chromosomal Assessment' at around 11-14 weeks to assess the risk of Downs Syndrome, and an 'Anatomy Scan' at around 18-20 weeks to assess the major organs and foetal development. The anatomy scan is where sonographers can sometimes give an indication of foetal sex. As well as these two routine scans many public and private ultrasound clinics can provide an early first trimester scan at around 6-8 weeks to confirm pregnancy dates and check for multiple foetuses, as well as a later 'Growth Scan' within the third trimester requested by the Lead Maternity Carer (LMC) to check foetal growth, placenta and umbilical cord blood flow. If there is a medical reason for the ultrasound scan, where the pregnant woman, or couple have a referral from their LMC then they may get the service for free at the public hospital or for a (heavily if you are a New Zealand citizen) subsidised fee at a private provider. If there is no referral from an LMC then the pregnant woman, or couple, are most likely going to be charged a fee depending on the type of scan they wish to have. During the time this Wellington-based research was conducted I was advised that a staff shortage at Wellington Hospital meant that only women whose pregnancies were deemed 'high-risk' were offered free on-site ultrasound services. All women whose pregnancies were considered 'low-risk' must go through a private radiography clinic if they wished to access ultrasound services, and pay the accompanying service fees. Depending on the whether the couple would like a 2D, 3D or 4D scan, and also on what 'package' of images they wish to take away with them, various service providers around New Zealand offer scans ranging from $30 to $255 without the need for a LMC's referral. With this research I explored how pregnant couples in New Zealand understood ultrasound when they had to pay to receive the examination and how they produced themselves as users of routine, commercial ultrasound within their New Zealand context.

Research Aims

This research aimed to explore the various discourses employed by pregnant couples whose pregnancy was defined as 'low-risk' and who had subsequently had at least one routine 'non-medically essential' ultrasound at a service provider

outside of the short-staffed public hospital environment. I was interested in whether the pregnant women and their partners drew on notions of visual primacy, the technological imperative and consumption and choice while explaining what the experiences of ultrasound and the relating images meant to them. I also sought to examine how the participants positioned themselves in relation to these discourses and used certain discourses as resources to negotiate positions navigate any contradictory demands that multiple intersecting discourses may make of them during their new social role as 'expectant parents' (Davies & Harré, 1990).

Integrating the three lenses provided the following questions through which to explore the pregnant couples ultrasound experience(s): How do they understand themselves in relation to their social context, and what forces act within that social context that lead to some ways of 'knowing' and 'understanding meaning' being justified and others being repressed? Specifically, how does participants' talk within the context of their 'not medically essential' ultrasound position them in relation to dominant understandings of the 'best' or 'right' way to experience pregnancy? Which ways of knowing are given power? Which individuals do these ways of knowing legitimate and empower, and whom do they restrain? How do the participants react within their subject positions? Do they embody or resist them, or do they move between or negotiate different ones? What purposes does their negotiation, acceptance or resistance serve?

Methodology

This chapter provides a description of the research design and the rationale involved in interviewing pregnant couples. Following this I offer a short discussion about the analytical approach I took to this research. There is then a detailed discussion of the recruitment process, a description of the participants and an explanation of the research procedure. Following this I describe the ethical considerations involved in undertaking this research and then provide an outline of the process I took for analysing the interview transcription data. At the end of this chapter I provide some reflexive considerations on my role in this research.

Design

Given that the aim of the research was to gain an in-depth insight, it was preferable to gather rich, detailed data from a smaller number of participants. Given the primacy of visual information as a driving force in our understanding of what it is to 'know', I recorded the interviews using a digital-video camera. During transcription the video recording allowed me to take note of the participants' body language, gestures and how they interacted with each other during the interview. The video recording captured how the participants referred to any image(s) they chose to share and how they used the image(s) to make meaning of their experience.

Analytic Approach

The interview process itself is a social interaction. As this research is grounded in a social constructionist epistemology, I did not enter the relationship with my participants assuming an 'expert' position to impose upon them my understanding of ultrasound. Rather I acknowledged their perspective in the construction of meaning for the experience within their social world and within the interview context. As discussed briefly in the introduction to this research, the four main assumptions of social constructionism fit well with a Foucauldian-influenced discourse analysis.

My analytic approach draws on Foucault's ideas of discourse, knowledge and power (Foucault, 1972, 1980) to explore how pregnant couples construct their understanding of what it means to 'know' about their pregnancy and ultrasound, at this particular moment in time within the New Zealand social context. Discourses are a system of representation through which social actors make their world meaningful. Certain discourses are taken up by individuals and institutions and put into practice to promote knowledge that is distributed as the 'truth' within a specific historical and social context. This knowledge then works to create particular versions of the social world, including what is considered acceptable and unacceptable, normal and not, thereby regulating people's practices (Foucault, 1972; Hall, 1997/2001a). In this way knowledge and power are intricately linked. Foucault (1980) conceptualised power not only as a negative force wielded by those at the top of the social hierarchy over those beneath them, but as a productive force, circulating within and between every level of social interaction.

Discourse produces knowledge and power, within which we, as subjects, are produced. As subjects of discourse we are both constituted by discourse and also (re)create and (re)negotiate our subjectivity within certain discourses. In other words, discourses provide positions for people to take up, resist or negotiate (Davies & Harré, 1990). Foucauldian discourse analysis enables an exploration of how the pregnant couples constituted particular subject positions through the images, metaphors and concepts that certain discourses provided them. It allowed me to investigate how the participants made sense of their social world by navigating the multiple, and possibly contradictory, subject positions made available to them. A focus on positioning meant being aware that the interview process was part of an ongoing, dynamic meaning-making procedure where, in and through talk, we all (the participants and myself) took ourselves up as certain persons (Davies & Harré, 1990).

Recruitment

I used word-of-mouth as my primary means of recruitment. The pregnant couples who participated were recruited through friends and family whom I had sent out a 'recruitment flyer' (see Appendix A) via email and asked them to pass

on to pregnant couples they knew. I informed my friends and family, and detailed on the research flyer, that I was interested in talking with couples who currently had a low-risk pregnancy and had had at least one ultrasound. I set these parameters in order to attract pregnant couples who would not have had access to the free in-house hospital scanning service but who would have had to access private radiography clinics and subsequently pay any associated fees in order to have an ultrasound scan.

Once interested couples got in contact with me (usually via email) I supplied details of what participation would involve and attached the full research information sheet for them to read and discuss together (see Appendix B). Pregnant couples did not need to be of any particular age, sexual orientation or marital status, but one member of the couple had to be a pregnant woman, and the other either the father of the foetus, or the partner with whom the pregnant woman planned to raise the child.

The time frame between the initial expression of interest and the email confirming they would like to participate ranged from four days to one month, with most couples confirming their participation within one and a half weeks of receiving the information sheet. Seven couples who showed initial interest in participating did not email me back after this second contact. As I had a sufficient amount of interest from other potential participants I chose not to send an email reminder to these couples (I understand that life can be very hectic during pregnancy and they may have had a change of heart, and I did not wish them to feel guilty or uncomfortable in any way).

Participants

Age, relationship and pregnancy information of the participants can be seen in Table 1. All of the pregnant women were under the age of 35. Pregnant women who are aged 35 or over are usually categorised as high-risk due to what the biomedical community refer to as Advanced Maternal Age (AMA), which has been associated with "adverse pregnancy outcomes" (Clearly-Goldman, et al., 2005, p. 983). As shown in Table 1., this was the first pregnancy for all but one of the couples. Most couples had had at least two ultrasound scans at the time of the

interview, although one couple had only had one and another couple had had four. All couples were in a heterosexual relationship. I received interest from one lesbian couple, however unfortunately we were unable to find a time that suited them to be interviewed before they left the country on holiday.

Table 1

Participating Couples' Age, Relationship and Pregnancy Details

Pseudonym	Age	Years together	Pregnancy	Weeks pregnant at ultrasound(s)	Weeks pregnant at interview
Audrey Tavish	32 32	6	1st	15	18
Kate Zac	33 40	2	2nd	6, 20	20
Ali Lewis	33 34	15	1st	12, 20	32
Steph Jack	32 32	12	1st	6, 12, 20	32
Lulu George	28 32	9	1st	6, 12, 13, 20	28
Eva Garrett	26 25	1.5	1st	8, 14, 20	29
Amy Tom	32 34	10	1st	12, 20	26

Procedure

All the participants chose to be interviewed in their homes, as that's where they felt most comfortable. Participants were advised in the information sheet that I would be video-recording the interview and I asked them to have any resources they received at their ultrasound(s) on hand for the interview (images, cds, dvds).

Prior to the interview I reminded them that I would be filming the interviews and on arrival asked them where they would be most comfortable sitting together so

that they could both be in the frame. I spent a few minutes chatting with participants about their day, how their pregnancy was going and about my research, then took them through the section of the information sheet detailing their rights. I highlighted that they may ask me to turn off the camera at any point in time, and reinforced that the video data was solely to aid transcription. I let them know they could request to have sections of their transcripts removed at a later time if, on reflection, they did not wish for certain comments to be included. None of the participants indicated any interest in reviewing their transcripts. One participant requested a copy of the digital video recording of the interview; I provided this as a MPG file loaded onto a USB drive.

I asked them to sign a consent form each (see Appendix C) and gathered some descriptive information about them, their pregnancy and the ultrasound(s). I explained the semi-structured nature of the interview, and asked them to tell me about their experience leading up to, during, and after their ultrasound. I told them that I had some questions I might ask along the way, but that I really wanted to hear about how they felt about their experience. The specific questions I had prepared in case they did not spontaneously talk about certain aspects of the experience such as the time leading up to their first ultrasound, the resources they received about the ultrasound, the ultrasound exam itself, and the 'effect' of the ultrasound on/for them are detailed in Appendix C. When talking about the resources the couple received from the ultrasound I asked them to hold images up to the camera (the only time in the interview where I asked them to specifically orient themselves to the camera) and talk me through what they saw in the image. I concluded the interview by asking the participants if they had any particular comments about their experience we hadn't covered. Here, the participants often asked me questions about how my research was going and expressed hope that what they had to say was 'useful'. I was always very interested in hearing about their experience and assured them that it was really wonderful to have them talk with me.

I gave every couple a double movie pass to their closest theatre as a thank-you for their time and for sharing their experiences with me, and reminded them that I would send out a research summary once I had completed my thesis. The digital

video camera I used for recording the interviews was a Panasonic SDR H101 camcorder with an in-built 80GB hard-disk drive and a Panasonic tripod, so that I could set up the camera to record from any angle in the room. I transferred the raw interview video data onto a password-protected computer in the form of MPEG files which I then viewed using VLC player. I transcribed the participants' talk verbatim, as well as their gestures in relation to their bodies, their interaction with each other, and the visual resources they consented to show me and talk about during the interview.

Ethical and Bicultural Considerations

There were a number of key ethical issues that were important to consider in designing and conducting this study. These were, briefly, issues relating to interviewing two people together such as informed consent and unexpected disclosures, issues of anonymity, and bicultural considerations.

As I interviewed pregnant women and their partners together for this interview I made it very clear that both members of the couple should be happy to participate in the interview. When I sent the information sheet out to the member of the couple who had initiated contact with me (usually the pregnant woman), I made sure to mention that they should read over the information sheet together and discuss with each other if the interview was something they would both like to do. While some members of the couples talked less during the interviews, I did not feel that their partner had unwillingly coerced any of the participants into taking part. I also reminded participants before the interview that they have the right to decline to participate further at any time, or to ask me to turn the video recorder off. After the interview, I also reminded participants that they had my email address and were welcome to get in contact if they wished to remove any particular comments or sections from the interview. I gave each of the participants a second copy of the information sheet at the beginning of the interview and we went through their rights as a participant before they each signed an individual consent form. These consent forms were stored securely at the Massey University Wellington campus.

To ensure privacy and confidentiality, all couples were informed that during transcription of their interviews they would be given pseudonyms and any people they mentioned in the context of the interview, as well as identifying information about specific service providers or health professionals, would be made anonymous. I gave the pregnant couples a chance to choose their own pseudonyms, but most were happy for me to choose them on their behalf when I came to type up their interview transcripts. All digital video data files and transcription files were handled by myself or my research supervisor and were stored on two password-protected computers, and hard copies of transcripts were kept in a locked office on the Wellington campus.

There was a possibility that, as I was interviewing pregnant couples together, they may disagree about an aspect of their ultrasound experience and this disagreement could cause tension between them or be problematic for their relationship. Although the participants were required to have a low-risk pregnancy to participate in the research, there was a chance that while talking about their current ultrasound experience couples may touch on emotional past experiences previously unknown to their partner or the researcher (such as an earlier miscarriage or abortion). In relation to these potential situations that could cause discomfort, I was prepared to remind participants that they are able to withdraw from the interview at any stage without having to give a reason and without penalty should they feel uncomfortable. I also reminded participants that if they felt concerned about any issues raised in the interview they should talk with their Lead Maternity Career about these feelings, as they are available to address any pregnancy-related concerns. I also had the ability to inform participants about the services of the Massey University Psychology Clinic should they wish to talk with someone about feelings of depression, anxiety, stress management or relationship difficulties. Fortunately, all of the participants were happy to talk about their experiences during the interview, and none became distressed or uncomfortable about any of the topics discussed. None of the participants requested to halt the interview early, or to have any parts of their transcripts altered or removed.

This research was not aimed to target or unjustly exclude any specific ethnic group with New Zealand. However, despite the focus of the research not being based on ethnicity but on a specific issue involving reproductive technology use, I still needed to consider the bicultural nature of New Zealand society. As I do not have personal knowledge or experience of Māori culture I sought culturally appropriate advice from the School of Psychology's cultural advisor. As this is qualitative, exploratory research, I did not assume to hold any objective knowledge about the participants' experiences, but rather I understood that the knowledge would be created and defined within the research process. It was not assumed that any participants who were of Māori descent represented the experience of all Māori, just as it was not assumed that a Pākehā couple's experience was representative of an all-encompassing 'Pākehā experience' as it is important to acknowledge the variability within as well as between cultures (Carpenter & McMurphy-Pilkington, 2008). To make generalisations and inferences about the New Zealand population as a whole was not the intention of this research.

An important aspect of undertaking qualitative interview research in bicultural New Zealand is to respect understandings of whakawhanungatanga. "Whakawhanaungatanga is the process of establishing relationships, literally by means of identifying, through culturally appropriate means, your bodily linkage, your engagement, your connectedness and therefore (unspoken) commitment to other people" (Bishop, 1996, p. 219). It was important as a researcher to be open to communicating my background, beliefs and motivations for doing the proposed research, as a means for the participants to trust me and talk freely. One aid to communication while conducting semi-structured interviews was to do this kanohi ki te kanohi (face-to-face), because 'he kanohi kitea' – a face seen is potentially a position understood. In the context of research, kanohi ki te kanohi "implies being prepared to show one's face and share of oneself" (Jones, Crengle, & McCreanor, 2006, p. 68). In order to fully share in the meaning-making process of the interview, participants must be able to trust those who are "ultimately responsible for the analysis, interpretation, reporting and dissemination of the data" (Jones, et al., 2006, p. 68). Once participants registered their interest in the research I always made it clear that I would be more than

happy to meet with them before they consented to partake. I created an opportunity, if the couples wanted, to be able to see, know and understand the person attached to the research (me) and develop a level a trust that they deemed necessary to tell me about their experiences with ultrasound.

Ethical approval for this research was sought from the Massey University Human Ethics Committee (MUHEC). After supplying clarification on some minor points, ethics was granted in March 2011 (Southern A application 10/83).

Analysis

I utilised a discourse analytic approach to analyse the data. I attempted to 'deconstruct' the transcription texts and explore how they are constructed by, and constructive of, specific discourses about visual primacy, the technological imperative and consumption and choice. Discourse analysis allowed me to explore how the participants articulated taken-for-granted assumptions about the nature of 'how things are' and constructed themselves as subjects that accepted, challenged or re-negotiated the positions these discourses made available for them (Burr, 2003). By analysing how participants construct hierarchies of knowledge, through endorsement or rejection of certain discourses in their interview talk, it was possible to explore how they use this knowledge to position themselves within the social world of pregnancy.

There are no 'recipe-style guidelines' for doing discourse analysis (Parker, 2007) and in my approach to analysing my research data I took guidance from my supervisor and a past Massey Masters student who had conducted similar research (Parker, 2007), and who was also my practicum placement supervisor. I approached my analysis in the following way:

1. First I undertook repeated critical reading of the texts, starting while I was transcribing the interviews and continuing for multiple readings. Here I tried to identify the discourses operating in the interview talk, and I attempted to look at how these particular discourses were put to work to construct particular people and particular ways of 'knowing' about pregnancy and ultrasound (Burr, 2003). I also tried to identify the assumptions inherent in the discourses and the contradictions that

multiple discourses presented, as well as what 'ways of knowing' were absent or relegated as 'less optimal'. I also looked for how the couples co-constructed their understandings together and if, and how, they used the ultrasound 'take home' image(s) as a tool for creating meaning.

2. Next I looked for patterns and recurring words and themes in relation to who was speaking and what was being said. I tried to identify what/who was excluded, denied or repressed in these repetitions.
3. I created a framework of main themes or categories and mapped these to help identify relationships between them and how they worked to construct particular aspects of the couples' ultrasound experience(s). In this way I could see how the discourses and constructions merged, overlapped or contradicted each other and from this level I could identify the subject positions relating to the discourses. I could also look at how the participants drew on different discourses to smooth over any contradictions inherent in their talk.
4. Finally I went through my transcripts and selected examples of participants' talk that clearly illustrated the conclusions I derived from my analysis.

Reflexivity

If one of the central assumptions of social constructionist research is that knowledge is something that people 'do' together, then I, as a researcher and contributor to the interview discussion, am an active participant in the construction of knowledge about the participants' ultrasound experience. By choosing this topic for my research, by calling for participants, by asking them questions and then collecting and interpreting their answers, and by presenting my interpretation of their experience in this thesis format, I am also a participant in constructing knowledge about ultrasound and pregnancy. Therefore, reflexivity is an essential aspect of this research. In order for my interpretation to be valid, readers must be able to know and understand my interest and motivation for this topic.

I never considered myself a political person until halfway through my undergraduate degrees in Anthropology and Psychology when I had to discuss

anthropologists' Faye Ginsberg and Rayna Rapp's (1991) insistence that you cannot separate reproductive politics from politics in general, with reference to a particular reproductive technology of my choice. I chose ultrasound as my technology to discuss, in retrospect probably because it seemed the least 'sciencey' of the available choices and was the most accessible from my lay perspective. The process of researching for this essay and the Anthropology of Reproduction paper as a whole really opened my eyes to how every aspect of our lives as social beings are lived within a system where 'the personal is the political'. My orientation to this research is as a critical feminist health psychologist keen to make explicit taken-for-granted assumptions about the use of ultrasound during pregnancy and to investigate how pregnant women and their partners position themselves within (or in conflict with) dominant understandings of the technology and the subsequent implications this has for their lived subjectivities.

Multiple aspects of my life have a bearing on how I interpret the data. At 26-years old I have never personally experienced pregnancy, and in my adult life to date, none of my immediate family or close friends have been pregnant. Therefore the day-to-day processes of pregnancy are alien to me. Yet I am of an age where it seems like ultrasound has always been there as a part of knowing one was pregnant. I remember thinking that was the only purpose of ultrasound, and was surprised in my teens to be the recipient of a scan in search of a uterine cyst. I even remember joking with the nurse that I was relieved there was no chance of seeing a baby. I was aware going into the interviews that my gender may mean that I orient more readily with the pregnant female than with her partner. As such I was very careful about ensuring I gave both equal attention, and explicitly asked the quieter of the two what they thought if they had yet to comment on a certain topic.

During the pre-interview 'getting-to-know' one another time, I came to realise that many of the participants did not know what health psychology meant in terms of what the ultimate 'point' of my research was. I believe that their perception of my research highlights the inherent assumption of a dominant biomedical discourse around science and research – that 'real' research must

consist of empirical, specific data to do with their experience. I became aware that many of the participants had different ideas about what I must be interviewing them about; perhaps I was interested in the 'safety' of ultrasound technology, the manner of their particular sonographer towards them, or their satisfaction with a particular service provider? As if 'simply' hearing about their experience was not worthy and there must be some more deliberate focus. I think the routine nature of ultrasound is one of the reasons why many of the couples thought there must be some specific aspect of the ultrasound I was particularly interested in, otherwise they could not understand why their seemingly ordinary experience with ultrasound was of interest to a psychology researcher. However, once they began to talk together about their ultrasound experience, I believe that my youth and lack of personal experience with pregnancy or ultrasound helped to encourage participants, in line with Willig's (2008) suggestion that expressing ignorance can work to elicit more information. In this interview situation they were the 'experts' in relation to the meaning and understanding of their pregnancy and ultrasound more generally.

"A Real Realisation": Constructions of Pregnancy, Ultrasound and the Foetus

The analysis showed that the couples drew on discourses which constructed aspects of pregnancy, ultrasound and the foetus in four main ways. These were 1) constructing ultrasound as normal and commonsense; 2) constructing the pregnancy as legitimate and valid; 3) constructing the foetus as healthy and normal; and 4) constructing the baby with personhood and gender. I use excerpts from the transcripts to discuss these four constructions.

An initial step in my analysis involved looking for how the couples worked together to construct their experience and whether they used the 'take home' images as tools in their construction. Tom, the male partner from couple seven[1], refers to one of their images showing an 'obvious' baby profile shot as the "money shot" a term which colloquially refers to the pivotal, climactic, most important moment in a pornographic movie[2] (this is the shot that cost the most money to produce and which gives the audience their 'money's worth'). Tom is not the only person to use this term when talking about the ultrasound images, Audrey, from couple one, also uses it to describe the specific image with the viewpoint "between the legs" that the sonographer used to interpret foetal gender. Audrey and Tom's use of this descriptor reinforces that seeing the 'baby-looking' profile and finding out foetal gender were some of the key ways in which the couples used the 'take home' images to continue to collaboratively construct the meaning of the experience and the images received. While all the couples used the images as tools to construct meaning during the interview, there was surprising variability in where they kept the images in their homes. Kate and Zac had only one image with them and Kate had to hunt it out from within a bookcase after searching for 5 minutes trying to remember where they had put it. At the other end of the scale were Amy and Tom with two blown-up images in pride of

[1] Information about couples' age, relationship and pregnancy is provided in Table 1. on page 44.
[2] Interestingly there is little online consensus on whether this term originated in the porn industry or whether the porn industry appropriated it from more general film industry use.

place on their fridge. Others had their images collected in the folders or envelopes given to them by the ultrasound providers. These images allowed the pregnant couples to present themselves to me as informed, aware, and responsible parents-to-be. The sharing of these images also allowed couples to perform their 'expectant parents' role with extended family, friends and co-workers.

Another early part of my analysis involved identifying any contradictions within the couples' talk. I noticed a number of contradictions and used these as an analytic tool to inform me about what was being talked about and in what ways. The couples smoothed over contradictions by drawing on different discourses and constructions in order to position themselves and the medical system in particular ways. Some examples of the contradictions are in Tables 2 and 3. Many of the couples talked about the initial ambiguity of the ultrasound image. But by using their 'take-home' images as examples and drawing on constructions of the normality of the foetus and foetal personhood they excused their lack of immediate visual recognition by not only assuring themselves that they can see the foetus, but that they can "definitely" see *their baby*, that 'little person' very "clearly". This contradiction highlights the medical staff's role in mediating the ultrasound image. The image was at first unclear, but once they were oriented in the right direction, the reality of their pregnancy took human form. They were able to take that information and use the images to show other people their knowledge about what the images represented. Passing comments like Lulu's "when it's pointed out to you" and Tom's "they set it up and you can see" work to minimise the medically-mediated interpretation of the image in favour of their own successful observations.

Table 2

Examples of the Contradictions about the Foetal Image Present in the Couples' Talk

Hard to Interpret	Clearly a Baby
Couple 1 Audrey: "Other than the profile baby shot they don't actually look like anything"	*Couple 1* Audrey: "[Tavish's] mum was like, 'I just really don't know what I was looking at' and I got quite offended, I'm like 'IT IS CLEARLY A BABY!"
Couple 2 Kate: "I have to say (3) not THAT sure about quite what it is really." Zac: "Could be an aerial photograph of (1) your parent's farm."	*Couple 2* Kate: "It was actually like you were actually seeing a proper person.
Couple 4 Steph: "You don't quite know what it is actually (*laughing*) you think it's in a snowstorm kind of thing"	*Couple 4* Steph:"I didn't actually realise you could get, um, pretty early on the hands and feet and stuff SO CLEARLY"
Couple 5 Lulu: "It looked like bubbling mud pools or something…Because you don't often know what you're looking at."	*Couple 5* Lulu: "I mean it was clear. Yea, you can definitely see it when it's pointed out and you know to look at it."
Couple 7 Tom: "But the mere fact, I mean (*leans forward and squints*) that you don't really know what you're looking at."	*Couple 7* Tom: "They set is up and you can see a little person there. You know, it's as clear as day. Really is, you know... It's pretty black and white. You could see yourself, you didn't have to be a rocket scientist."

As Table 3 illustrates, the ultrasound was talked about both as a blasé part of the many medical processes in pregnancy, and in terms of its personal, emotional importance. The couples expected the scan to be short and clinical, focusing on the medical aspects, and were surprised if the sonographers 'indulged' their parental desires. Contradictorily, they also expected it to be an emotional environment cultivating this new parent-child connection and were surprised when this was not the case. This echoed notions of the "hybrid" nature (Taylor, 1998) of the ultrasound examination as a medical *and/or* social event.

Table 3

Examples of the Contradictions about the Meaning of Ultrasound Present in the Couples' Talk

Regular Medical Event	Special Social Event
Couple 1 Audrey: "You know you're pregnant, then they give you these pills to take, and then they send you for a, you know, an ultrasound, and then they, you know, you go do your antenatal classes and then you give birth I suppose. So it's all part of the process."	*Couple 1* Audrey: "They put a bit of time into, sorta you know, it's not just snap, snap, snap, snap, snap." Tavish: "Very sort of relaxed and sort of not in the door and out again, sort of thing, it was, yea, she seemed to sort of take her time and you know, if we were sort of, looking for something specific, she'd sort of muck around trying to get a good shot."
Couple 3 Ali: "It was quite (*frowns*) um, clinical. Like you go into a dark room and (3) they say, it, it wasn't very personal I guess. It was, yea, I found it really reassuring and I found (*shrugs*) I mean they were nice."	*Couple 4* Steph: "So it's pretty special and you do kind of look forward to it cos it's kind of quite incredible to be able to SEE that little window into what's happening in there isn't it? (*Jack nods*).
Couple 4 Steph: "But um (1) but yea it was all over really quickly as well. Like it took five or ten minutes and you'd built it up and then you're 'oh' (*shrugs*) (1) 'Oh okay I'll just (*swipes hand over stomach*) wipe that off and head off back into town and have my lunch (*her and Jack laugh*) and that was that you know, like popping into the shop to grab something you know (*laughs*)."	*Couple 5* Lulu: "I don't think it's necessary for that screening, (*shrugs shoulders*) it was just to have a connection and SEE the baby." George "Yea I just really liked seeing inside. Just sneak another peek (*laughs*)" Lulu "Yea and we feel actually lucky, you know even though the prospect of having a low-lying placenta is not IDEAL, but it still means we get a second scan at thirty weeks and people don't. That's it, gone. So it's actually really cool we get to, to have a second look."
Couple 7 Tom: "Measure, measure, measure, well measuring things or identifying things. It all just seemed very systematic."	

The way the couples navigated between the medical and the social spheres reinforces notions of biomedical ownership of the experience. The couples don't want to embarrass themselves by demanding to see something specific or close up, they don't want to appear frivolous and wasteful of the professionals' time. They make their understanding of the rules of medicine's priority clear and were

grateful when the sonographers took extra time to "muck around trying to get a good shot" for them. Engaging with the technology is necessary to ascertain foetal normality and to truly *know* their baby. As Tom aptly sums up below, the couples recognise that they are powerless to choose to omit any steps in the 'correct' process of pregnancy:

Tom "We're in the SYSTEM you know."

Couple 1

The following section will explore four constructions which were apparent in the texts and functioned to smooth out these contradictions as well as to position the couples and the medical system in certain ways.

1. Constructing Ultrasound as Normal and Commonsense

One of the most frequent constructions was that having an ultrasound was such basic commonsense as to be almost beyond question. Ultrasound was constructed as an everyday part of the pregnancy process and therefore the act of having an ultrasound scan (or multiple scans) was completely normalised, as shown in the excerpts below:

Audrey "It's just always been discussed as being part of the process."
Tavish "A matter of course, yea, like just with everyone…Why wouldn't we sort of go for it?"

Couple 1

Lewis "I guess I would always, I mean I guess I'd always, it wouldn't have been something that we would have discussed, um, not having scans as well. Is that ever an option, not to have them?"
Ali "Well (*long pause*) for us it wasn't."

Couple 3

Tom "You should do it absolutely. There's no reason why you wouldn't"

Couple 7

Audrey and Tavish's comments construct ultrasound as completely ordinary, simply another experience in the on-going process of pregnancy. Tavish points out that they are not unique in their experience but that it is the same "just with everyone". Both Audrey and Tavish use the word 'just' to communicate that

ultrasound is no big deal. Ultrasound is a typical endevour for pregnant parents and using 'just' functions to align them with similarly ordinary parents-to-be. Both Tavish and Tom further convey the normality of the procedure through their similar questioning of why anyone wouldn't have a scan. Drawing on a construction of ultrasound as normal in this way suggests that Tavish and Tom (and 'just everyone' else) would seriously call into question the character of those people who wouldn't have an ultrasound, because there is no reason not to. Lewis's comment questioning whether it is even a possibility to not have ultrasound highlights how entrenched the normality of ultrasound is within these couple's worlds. Constructing ultrasound in this way creates a non-choice; pregnant couples may not be actively choosing to have an ultrasound because it is not constructed as a voluntary procedure from which they may opt-out. Instead, it is just "what's done" so therefore they must do it. Only Eva makes their awareness of the choice explicit when she says:

Eva "And so [midwife] sent us, well no sorry ASKED us if we would like to do another scan."

Couple 6

However this awareness of their choice to partake in the technology is then negated when further on Eva points out:

Eva "Yea it didn't seem like there was an alternative. There was, like, (*holds up right hand commandingly*) we need to know how far along you are (*holds up other hand*) this [blood-test] is inconclusive (*holds up other hand again*) so this is what we do."

Couple 6

Pregnant couples don't want to deviate from the norm, perhaps because this could be construed as bad parenting. Therefore there is no alternative but to partake in the technology that is constructed as the most commonsense, and therefore right, thing to do as parents-to-be. Inherent in Eva's comment is also the biomedical assumption that parents must partake in the technology to know all that it is possible to know about their pregnancy. Who is it in Eva's comment that HAS to know how far along she is? Regardless of whether she or the medical professionals know exactly how far along she is, a baby will still be born in around nine months time. This is an example of how drawing on discourse that

constructs ultrasound as normal and commonsense obscures biomedicine's claim of authority over the process of pregnancy.

Biomedical authority over what can be counted as 'real' knowledge about pregnancy is obscured when ultrasound is constructed as 'just what's done'. In particular the way the couples talked about the two most commonly timed ultrasounds (the 12 week chromosomal assessment scan and the 20 week anatomy scan) illustrated internalisation of biomedical suggestions of appropriate behaviour into their own lay knowledge about using the technology. When asked about how they knew to have their first scan, Amy and Tom responded:

Tom	"I think everyone assumes anyway…I already knew that you know you don't tell anyone before twelve weeks just from general knowledge. You knew at twelve weeks that you go to get an ultrasound. And it's just, it's just –"
Amy	"- And they, and they see that everything's where it, like it's got (*holds hand up*) five fing-, <u>four fingers and a thumb (*laugh*) five toes and it's got full ch-, yea yea</u>
Tom	"<u>Yea no, just. Just the basic checks to make sure it's not like a mutant baby.</u> You know it's just like common knowledge. You know, like it is. I would have known, even if [midwife] hadn't have said you have to go have an ultrasound, like I, we would have gone into that first knowing –"
Amy	"Knowing that <u>yea twelve weeks</u>"
Tom	"<u>Yea exactly</u> we need a twelve week ultrasound obviously."

Couple 7[3]

Tom states that his and Amy's ultrasound knowledge isn't medically specific but "just from general knowledge", something that everyone knows. He then goes on to reiterate this by saying not 'we knew' when to get the ultrasound but "you knew" highlighting that it is not just them but *everyone* who knows this timeframe. He further reinforces this notion by explicitly stating "it's just like common knowledge" that I (the interviewer), they (the pregnant couple) and everyone else "you know". Tom minimises any special consideration necessary for the scan by repeatedly using the word 'just' to convey that ultrasound is no big deal and a completely natural step in the progression of pregnancy. Finally he

[3] Underlined text indicates that the couple were speaking at the same time.

finishes by referencing their "need", not want, to have a 12-week ultrasound and that this need is obvious. This talk is steeped in biomedical assumptions about the necessity of ultrasound-mediated intervention by medical professionals into pregnancy. When talking about how they knew to have their scans when they did, Audrey said:

Audrey "It's almost just accepted that it happens, like a, all my friends who've either been pregnant or are pregnant, or whatever, they just say (*in a matter-of-fact voice with eyebrows raised like it's obvious*) 'you have your 12 week scan and you have your 20 week scan.' It's just, it's what's DONE (*shrugs shoulders*) almost, if you know what I mean… You're meant to have a second scan at about 20 weeks"

Couple 1

Audrey does not explicitly attribute her and Tavish's knowledge to the medical community, instead it is "just accepted" behaviour that all of her friends (the "or whatever" at the end of that list suggests not just those who have been or are pregnant, but everyone) know about. Again it is not 'we have' but "you have" suggesting everyone is included in this knowledge. Audrey goes on to reiterate that "you're" (i.e. *all* pregnant women) "meant" to have a scan at about 20 weeks. The word 'meant' suggests that this is not only normal behaviour but it is the correct action that you *should* be taking if you are a pregnant couple. Here the moral element of this normalising discourse becomes apparent. Because it is general, common, accepted knowledge that pregnant couples have ultrasound scans, specifically at around 12 and 20 weeks, those who do so are positioned as 'normal' parents-to-be who are proceeding in the correct and appropriate way. The commonsense discourse functions to position pregnant couples who partake in ultrasound as good parents, in opposition to those, who by implication, are positioned as morally questionable or bad parents.

The couples' talk about paying for their scans also highlights the construction of ultrasound as normal and commonsense behaviour. When asked whether they paid for a particular scan or how much a certain scan cost, many of the couples had trouble recalling which (if any) of the scans had associated costs and how much those costs were. As shown in these excerpts from couple one and six:

Audrey "No, no it's fr- (*turns to Tavish who is looking at her frowning*) oh wait no we had a surcharge"
Tavish "Yea"
Audrey "So like I think it cost us 40 bucks or something like that. It's subsidised, its part subsidised."

Couple 1

Garrett "Yea they, they've all been free"
Eva "Ooooh no I had to pay for one."
Garrett "Oh did you?"
Eva "Yea. I had to pay for one.
Interviewer "Was that the latest?"
Eva "No"
Garrett "Oh"
Eva "That was pretty early on."
Garrett "Maybe it was the first one that we had to pay for?"
Eva "It could have been."

Couple 6

Here the ultrasound is commonsense and so normal that couples have not put much thought into the cost. When ultrasound is "just what's done" then, for the middle-class couples that were involved in this research, the cost becomes a non-issue, not a memorable part of the event.

In summary, as the couples talked about how they understood ultrasound technology and its presence in their pregnancy experience they constructed ultrasound as a routine, commonsense activity. They positioned themselves as normal parents-to-be, doing the right thing by partaking in the technology that is offered, "just like everyone else". What is considered normal and therefore 'right' is based on biomedical conceptions of the correct behaviour for 'good' pregnant couples. Biomedical-based knowledge and belief has permeated lay perceptions of normality in pregnancy to such a level that having an ultrasound is understood by these couples as the standard pregnancy procedure. This "why wouldn't you?" understanding is so embedded that many of the couples hinted that they thought it was odd I was even asking them.

2. Constructing the Pregnancy as Legitimate and Valid

Ultrasound was constructed as the only sure-fire way to *really* know the *ultimate* truth about the pregnancy. Although other indicators like the two pink lines of

the over-the-counter pregnancy test, the positive blood test, and the pregnant woman's bodily experience were present, these were all constructed as inferior to the truth that is assured by the technologically-mediated vision of ultrasound.

When ultrasound is constructed as the only way to know if the couple is *really* pregnant then the ultrasound image is positioned as the proof. Before seeing the image, while the couples may have been suspicious of their new status, they (and everyone else) could not be truly sure of their pregnancy, as shown in the following excerpts:

Kate: "OH MY GOD! I'm pregnant now. There's a real thing happening here. There's something there. It's much more real than two lines, the doctors or a blood test or anything"

Couple 2

Ali "It was also confirmation that there IS something inside you, you know like prior to that um, scan you've kind of peed on a stick and (*smiles*) that's IT, there's no, there's no (*laughing*) other confirmation that you are actually pregnant and (*shrugs*) you know"

Couple 3

Garrett "It was actually quite the confirmation as well. Like we, we (looks at Eva) we were pretty sure but it's the first kind of solid thing we had that was (holds hands out in front of himself) yea, actually having a baby."

Eva "Yea apart from the, the two pink lines."

Couple 6

All three excerpts above demonstrate a denial of the pregnant woman's bodily experience. Kate condenses her bodily experience up the point of the ultrasound in the flippant phrase "or anything", Ali feels that there was no bodily experience worth mentioning that suggested anything was going on "inside" her, and similarly Garrett and Eva convey no notion of her bodily experience prior to the "first. solid thing" of the ultrasound. The complete omission of references to the sensations of the woman's pregnant body highlights that the women's way of knowing pregnancy holds little sway in the hierarchy of knowledge.
Furthermore, many couples talked about having the ultrasound scan as the point where the pregnancy became "real":

Audrey "It makes it real you know? The, you know –"
Tavish "I think we were both thinking it's, you know, it's quite a long, (*smiles while looking at Audrey*) LONG HAUL, you know –"
Audrey "(*smiles while looking at Tavish*) Yea!"
Tavish "- for us to, you know, to that, um –"
Audrey "It feels like a long process, (*rolls her eyes*) Nine months"
Tavish "You know all of a sudden you feel the pressure of being a parent… A real realisation."

Couple 1

Ali "It makes it feel more real…especially at the start, early on, because nothing really, you know like you carry on your life…So I think it, to see a picture of (*runs hand over stomach*), you know to have the scan done is**,** makes it feel a lot more real."

Couple 3

George "It was kind of weird, made it seem really REAL. I mean I knew it was real previously, but you can see the little heartbeat and stuff…It was like WOW, it actually IS there (*laughs*)."

Couple 5

The suggestion that any of these couples weren't *really* pregnant until they saw the ultrasound image of the foetus reinforces the idea that the technology gives the final certification of truth. As couples must go to medical professionals to gain access to the technology, the biomedical community become the gatekeepers to the truth about the couples' pregnancies. Tavish's statement "you feel the pressure of being a parent" highlights that not only is ultrasound constructed as legitimating the pregnancy, but also the pregnant couple are now constructed as parents-to-be. Once the pregnancy is made 'real' for the couples using ultrasound technology, they are given keepsakes in the form of 'take-home' images of the scan. As Steph suggests in the next excerpt, in the time before the woman's body visibly shows signs of pregnancy, the images can prove to others that they are 'really' pregnant:

Steph "So that was really nice cos it's kinda something really concrete that you can show people."

Couple 4

Furthermore, ultrasound as an identifier of the pregnancy was constructed as superior to both the pregnant woman's corporeal experience of her body changing and her partner's experience of any outer changes to her (visible) body, as demonstrated in the following excerpts:

Steph "Even though, to me I couldn't really, I didn't really feel THAT pregnant. Like apart from being a bit crook there was no manifestation of it kind of thing… Because often a lot of the signs to say that they're actually there and they're doing well can be kind of quite, you know (*screw up face*) SYMPTOMS of kind of annoying things, sort of thing so to see that sort of stuff, and to be verified."

Couple 4

Lulu "And I sort of didn't look really pregnant and I think it's sort of made it definitely seem very real cos you don't connect the two I think in the early days. I mean apart from the fact that I felt very ill, and I still do (*laughs*), so I'm quite aware of it, and I was VERY aware that something was going on but it really confirmed it."

Couple 5

Amy "But um, I s-, apart from feeling sick all the time you don't really feel like you're pregnant, you know."

Couple 7

Here pregnant women's knowledge and bodily experiences are constructed as secondary to the validation offered by the visual knowledge of the ultrasound. The women also construct the ultrasound image and the knowledge it provides as a kind of reward, in recognition of the "miserable" time that must be endured beforehand during the initial "symptoms" of pregnancy.

The coveted ultrasound image confirms the pregnant couples' success in their performance as a heterosexual-couple-of-child-bearing-age and is therefore lauded as certification of their pregnant couple identity. Many of the words the couples used when talking about their pregnancy in relation to having their ultrasound – 'actual', 'actually', 'confirmation', 'tangible', 'real', 'concrete', 'solid' and 'verified' – bring to mind a courtroom where the pregnant couple are on trial. As proof of their pregnant state the jury will only accept the highest form of evidence, which cannot be questioned or misinterpreted, and this comes in the form of the biomedically-guaranteed ultrasound image. Up to the point of the

first ultrasound confirming the pregnancy, the pregnant couples have been on trial and now the ultrasound acts as a thumbs-up and they can officially begin to fill their roles as legitimate parents-to-be. With the ultrasound comes confirmation of their new, public (and therefore open to judgement) parental status with takeaway evidence serving as the proof for others to see.

Constructing the ultrasound as a way of legitimating and validating the pregnancy functions to reinforce the notion that *to see* a technologically-mediated view of the foetus is the only real way *to know* the truth. This sets the technology up as the arbiter of truth – the ultrasound is the top of the hierarchy of verification. As seen in the next excerpts, the way that the couples talked about the various sonographers they came into contact with reinforces the underlying assumption that the pregnancy can only be validated by scientifically measureable observations:

Audrey "She was, um, old school nurse (*looks at Tavish*)"
Tavish "Yea"
Audrey "You know, so comes across as really crusty –
Tavish "- and quite gruff to begin with (*laughs*)"
Audrey "Yea. A little scary. But then she just really matter-of-fact and stuff like that but she was really good."

Couple 1

Jack "But the guy was so sort of matter-of-fact about it that he was sort of like (*smiles*) an accountant or something (*Steph laughs*). He was very dry, but yea."

Couple 4

Steph "She was very matter-of-fact and she was very precise. And she was going through every particular right down from you know (*touches her head and then sweeps her hand down her body*) here, right down to toes."

Couple 4

The reoccurring use of the descriptor "matter-of-fact" constructs the medical professionals as the authority figures because they are the ones who possess the tools to be factual and objective. No guessing-games, just real "old-school" characters who know what they are doing. In turn, this constructs the pregnant

couple as being good patients/clients, doing what they are told and following the authority of those with more knowledge (power) than themselves.

In summary, when ultrasound is constructed as the only way to know the real truth about the pregnancy then confirmation can only come from engaging with the visual-technology. The ultrasound image was constructed as proof of a legitimate, valid pregnancy superior to any over-the-counter test, doctor-administered blood test or changes in the woman's body either invisibly felt by her or visibly seen by others. Only by participating with health professionals, partaking of the visualising technology, and getting 'take home' images as visual proof to show the world, will the pregnant couple be officially recognised as parents-to-be.

3. Constructing the Normality of the Foetus

In the couples' talk there was a clear emphasis on constructing the foetus as healthy. With talk about measurement, size, growth, development, body-parts and organs the foetus was constructed as not only healthy but, more importantly, normal. This subtle emphasis on health being interpreted as normality reinforces the idea that the ultimate outcome of the couples' pregnancy 'work' is a normal, perfect, complete product.

Some of the talk constructing the normality of the foetus echoes parts of the 'legitimation and validation' discourse discussed previously. But this time it is not the pregnancy that is legitimated, but the foetus as a healthy baby:

Tavish	"I spose we both weren't really expecting it to be almost as developed oor –
Audrey	"- yea"
Tavish	"Sort of, um, you know –"
Audrey	"- Cos <u>he was, he was ninety-two</u>"
Tavish	"<u>the</u> whole expectation of (*holds up hands to almost frame face*) what a baby looks like"
Audrey	"He was ninety-two millimetres at the time. So from head (*holds up one finger pointing*) to bum (*holds up other finger*) like about that. And I'm like (*looks at space between fingers*) well that's actually quite a big, that's you know, that's solid, that's a baby. And, and he looked like a person. So he had little arms and legs and you saw (*outlining it in the air*) and you see the little profile shot with the head and the nose and the stuff, so he, yea, he looked like a little

person as opposed to just something that was making me constipated."

Couple 1

Tavish and Audrey allude to the normality of their 'baby' by listing the presence of three specific body-parts that are also in other couples' talk about the foetus – arms, legs and the face (or 'profile shot' in this case). Listing of the limbs including fingers and toes, as well as the head, face and individual facial features reinforce the idea of health as a body that is normal (no visible deformities) and complete (no missing body-parts). As the couples talked about what they saw during the ultrasound scan(s) it became clear that the sonographers' narratives were integral in the construction of the normality of the foetus. The couples used the images they brought to the interview to 'mirror' how the sonographer had shown them the images, pointing out the bodily features that most obviously confirmed foetal normality in terms of looks (limbs/face) and functioning (internal organs). Some examples of this can be seen in the following excerpts:

Steph "And she was very good at explaining sort of why, (*holds thumb and forefinger up to the image*) measuring up, I guess you know, the legs and the arms and everything and turning it round and sort of saying (*pointing to different parts of the image*) "this is the aorta and it's got this kind of valve" and all this sort of thing, "it's got two kidneys"

Couple 4

Eva "It was really extensive"
Garrett "Yea, measuring of lengths. Um, to check that the growth was all right. I think they like (*touches thigh*) measured the femur length or something like that."
Eva "Yeeea"
Garrett "Which is, was –"
Eva "And all the organs and things, and pointed out the kidney and stuff.

Couple 6

Tom "She explained everything. She said oh look that's, you know like I'm saying, that's, that's the head or you know that's the kidneys there or that's the heart and that (*finger on the image*) that's the chambers of the heart and you got four there's (*pointing*) one, two, three, four and that's the kidney and that's the liver… Just going around measuring a whole lot of stuff. Looking at a whole lot of

stuff. Identifying stuff too you know (*using hands to point in front of him*) there's the measuring bit and then they got the, you know put the arrow saying this is the whatever."

Couple 7

The couples used the images together to prompt them to remember all the body-parts mentioned by the sonographer in their previous scan(s). It became apparent that the couples understood the 'ticking off' of more and more full and functioning body parts as confirmation of the health of the foetus. If healthy is normal, and normal is the 'complete product' then the machine-mediated visual insight of ultrasound confirms, crucially, the increased viability of the "little person" inside the womb.

Constructing health as nothing immediately recognisable as abnormal, missing or out-of-place helps the pregnant couples to interpret the ultrasound images as reassuring of the viability of the foetus so that they may start talking about it as their baby. The next excerpts highlight how the couples work together to jointly construct the normality of the visualised foetus and so, their baby:

George "(*Comparing an earlier image to the newest one)* At least the heads starting to look a bit more normal (*laughs*)"
Lulu " – the heads looking like a baby (*laughs*) not –"
George "Mm"
Lulu "A big developmental difference. Which was really nice."

Couple 5

Tom "And the mere fact too, you can kind of see, it looks kind of normal to you. Seeing the, well (1) yea, once again yea just, just being told that it was healthy –"
Amy "Mm. And that everything's where is should be"
Tom "Exactly, I wouldn't even, exactly"
Amy "And it's got all it's –
Tom "It's got all it's bits."
Amy "- as well."
Tom "Parts and the right parts, the usual one's –"
Amy "And it's the right size and yea."

Couple 7

Lulu and George are visibly relieved when looking at the latest scan because the foetus's head is looking more normal, looking more like a baby. Amy and Tom make similar references to health as normality as they talk about the foetus

having all "the right parts" nothing unusual and everything "where it should be." The visual access offered by ultrasound to see (confirm) movement, the heartbeat, and count off limbs and organs allows the parents-to-be (with the help of the sonographer) to narrate foetal personhood into being. In this way the scan works to construct the image as that of a person or baby, not merely a foetus, as seen below:

Audrey "He started being a person rather than a pregnancy…You know, you can actually tell it's a baby (*points to the head*) with its head."
Couple 1

Kate "It was actually like you were actually seeing a proper person"
Couple 2

Audrey and Kate note that the ultrasound allowed them to see not just a person, but actually a "baby, a "proper" person. In the excerpt below, Steph explicitly talks about the effect that seeing the image has had in contrasting the imagined foetus of the pregnancy to the actual person that is visualised by the technology:

Steph "It's funny cos before I got pregnant and probably more so if I hadn't seen the scan, you don't kind of think of it that, you think of it as just a foetus or something like that and you don't really think of it as actually a person. And to see how quickly it actually formed up was quite SCARY actually, when you, you kind of don't really think that anyone's really pregnant until they're quite a way through but actually that's started actually looking like a person really quickly (*laughs*)."
Couple 4

In the three previous excerpts Audrey, Kate and Steph use the word "actually" as a rhetorical device to construct their healthy foetuses as authentic, genuine people. The word "actually" conveys the idea that the status of their healthy, normal foetuses as real people is beyond doubt. This echoes the previous discourse where ultrasound is constructed as the only true way of knowing the *reality* of the pregnancy – the reality being the real person whose existence is previously only imagined but now technologically-confirmed.

One consequence of constructing the foetus as a normal, healthy baby is evoking particular feelings for the parents-to-be. Ultrasound was primarily linked to feelings of reassurance and relief. The technology is understood as all-seeing,

with no abnormality or dysfunction remaining hidden which assumes that it won't make mistakes. This makes the technology difficult to critique. The scan(s) act as the informant for, and in these couples' cases reassurance against, "potential foetal catastrophe" (Ivry, 2009, p. 199). The following excerpts demonstrate that the couples are extremely grateful for this reassurance:

Kate "Basically it was just quite reassuring because at that stage you can't feel anything, you don't know if the baby's really there and is still okay. So this, I think the scan, the ultrasounds that we've had have been quite reassuring cos you can see that the baby's there (*Zac nods*) and its got the right number of limbs and its got a heartbeat."

Couple 2

Ali "At the twelve week scan, you just want kind of reassurance that everything is as it, you know, you've got a healthy baby."

Couple 3

Steph "I guess you're almost relief cos you don't even, it doesn't hit you that all that, that STUFF (*organs etc*) is really important to check out and she'd gone through ALL this stuff and you're kind of like 'oh god that's really awesome that it's actually healthy"

Couple 4

Kate, Ali and Steph all reference the implicit notion of pregnancy-as-risky by expressing the reassurance/relief gained from visual confirmation of their baby's health (normality). This construction functions to locate pregnancy in the realm of the medical, not the natural, and reinforces biomedical authority. Again, this creates a non-choice about using ultrasound technology. If it is accessible for parents-to-be to gain reassurance then why wouldn't you? Tom alludes to how entrenched ultrasound technology has become in pregnancy when he talks about the possibility of life without ultrasound:

Tom "Cos it would be nice to have another one just for triple reassurance again. I mean it must have been terrible in the old days when if you didn't have ultrasound like not knowing, you know, anything really. It could be completely, well I don't know, yea, just not right and you just wouldn't know right until the end. It'd be traumatic."

Couple 7

Tom's suggestion that we would essentially be 'left in the dark' without ultrasound, not knowing *anything,* firmly situates pregnancy in biomedical hands, completely ignoring women's embodied knowledge. The technology is so firmly embedded in understandings of pregnancy that Tom believes it would be distressing if we didn't have the visual access to information about the foetus that ultrasound allows. The ironic aspect of the construction of ultrasound as reassurance of foetal normality is that the technology cannot actually do anything to minimise the risks the medical community present as inherent in pregnancy. Although the technology can offer the viewer reassurance on one level, there is little that the health professionals can offer in terms of a cure or restorative treatment if the ultrasound reveals an abnormality (Carolan, 2008; Rothman, 2001). They may be able to prepare the couple for emergency surgery, an abnormal birth or the possibility of on-going therapy given the prognosis for the child the defective foetus might become. But the only solution they offer is likely to be selective abortion given the lack of treatments for "virtually all of the conditions for which foetuses can be screened and tested" (Rothman, 2001, p. 183).

References to the notion of parents-to-be striving to ensure foetal perfection are implicit in the talk of both Lulu and George, and Amy and Tom when discussing the reassurance offered by their scanning experience:

Lulu "But I must say it was really lovely and that's a (*rolls her eyes*) 'nice' word to use but it's lovely to see that the baby is SO far normal and it was a real reassuring, nice thing to know that everything was where it was meant to be and at the end of the day I think that as parents, new parents or anytime parents that's ALL you can want, is that the baby is looking healthy and regardless what it, girl or boy, or, and, um, the heart you know, seems fine…it was so nice just to hear SO FAR that everything's good."

Couple 5

Tom "But yea, no, no so everything was good and everything was all right and all the rest of it you're going phew thank god!"
Amy "Yea"
Tom "Um cos all we want is a healthy baby –"
Amy "Hhm (*nods*)"
Tom " - at the end of the day."

Couple 7

Lulu and Tom's use of the phrase "at the end of the day" suggests that the ultimate goal of pregnancy is for the parents to deliver the perfect product – a healthy, *normal*, baby. And it isn't just themselves they are speaking for, Lulu's use of a three-part list, "as parents, new parents or anytime parents," functions to cover all types of parents, even those people who are only potential-parents (i.e. ALL couples). Three-part lists are seen as a highly persuasive rhetorical device to convey generality (Jefferson, 1990). Both Lulu and Tom are also working here to portray their understanding of the seriousness of the situation. Although they may enjoy seeing the foetus, they are aware of their position as parents responsible for the safe-keeping and well-being of their future child. As such they are taking the responsible choice to partake in the technology that will offer them reassurance of their success so far. The positive scan, therefore, is the reward for their 'pregnancy work' up until this point:

Eva	"I felt, it was g-, I'm g-, good I'm glad I got that done then. Just to (*bats hand down in front of her*) I don't know, just to get the thumbs up I guess."
Garrett	"Yea I think definitely the reassurance factor is probably the most positive thing. Everything's goin' all right. You know so much of it seems, well IS just completely out of your control really, I mean all you can do is like keep healthy, and keep [Eva] healthy."

Couple 6

Eva's comment hints at the idea that as well as functioning as confirmation of the normality of the foetus, the ultrasound also functions to confirm their 'correct' parents-to-be pregnancy behaviour. They are engaging in the appropriate available technology to ensure that they minimise all possible risks of bringing a deformed final product into the world. Garrett's comment hints at the ambiguity of their position because despite the responsibility laid on their shoulders, essentially the situation is "completely out of your control". His comments also suggest that he is aware of the non-choice context within which pregnancy is embedded.

In summary, the construction of normality of the foetus in the couples' talk positions the foetus as a viable, functioning, member of the family and as the ultimate goal of pregnancy. It functions to make the foetus a baby that is not only healthy but more importantly, is normal. Confirmation of foetal normality means

that the parents-to-be are so far behaving appropriately in their position of responsibility for 'Life Itself' (Haraway, 1997). As such the consequences of this construction are positive feelings for the couples, such as reassurance and relief that their "baby" is (so far) healthy. This construction relies on technology to enable the couples access to the images they interpret as a person – their baby. The technology shines light on the facts of the foetus, and these visualised details are taken as authentication of the normality of the foetus, interpreted as confirmation of a healthy baby and result in positive emotions for the parents-to-be.

4. Constructing the Baby with Personhood and Gender

A construction of the baby's personhood and future potential as a human being was built on interpreting foetal movements, made visible by the technology, as intentional actions which the foetus was performing for its audience. Gender also emerged as central to the construction of foetal personhood. Visual information gained with the technology enabled the couples to construct a future person and locate this person within a family unit, with themselves as parents in this new unit.

One of the ways in which the pregnant couples used what they saw in the ultrasound images to construct foetal personhood was to bestow foetal movements with deliberate intent. Here the foetus' movements were talked about as though they were actions performed deliberately to gain attention of their audience:

Kate "I think they're quite fun. Like I think it's quite cute, especially when the baby's like (*cycles her fingers round each other*) rolling and turning over and wriggling around."
Zac "When they do tricks it's good."

Couple 2

And,

Steph "Yea it's doing kind of actions and things. All the active things just like you would outside of the womb."
Jack "It's not just like this little organism or something."

Couple 4

The first two excerpts show how the couples jointly construct foetal personhood. Kate and Zac talk about how "cute" their baby was during the scan moving around for them and performing appropriately for the 'first act' of its life. And Steph points out that her baby-in-the-womb was doing all the actions that already-born baby's do. These actions prove to Jack that it is not merely a "little organism" but a real human being. These excerpts demonstrate how couples work together to achieve similar ends, in this case a joint understanding of the foetal image as a representation of their future baby.

In constructing the foetus with personhood, couples frequently used and interacted with the 'take-home' ultrasound images, showing me what they were seeing. Eva enjoyed showing me one particular ultrasound image because in it, according to her, the baby is "looking right out at you" as though through a window to the outside world:

Eva "I really liked looking at this one before, like, yea I said, BECAUSE (*points to a particular spot on the image*) it's a real good, like here you can see the f-, like the skull and the head and the face and (*pulls hand out from the photo like something looking out from it*) it's looking right at you."

Couple 6

It is while talking about the images that many of the couples also expressed (often apologetically as though I was missing out on the real deal) that it is seeing the movement of the foetus that makes the 'baby' real, more so than just seeing the static images:

Kate "I mean it's kind of a nice photo. I think it's more meaningf-, I found more meaningful looking at the pictures of the baby (*cycles arm in air in front of her*) actually tumbling round and moving and (*points to young son sitting in front of her*) he sucked his thumb quite a lot during the scan which was quite cute."

Couple 2

Eva "I guess because when I, when we looked at them it was immediately after I'd seen the baby (*holds up hand in front and slightly above herself*) ACTUALLY moving on the screen for quite a while."
Garrett "Yea"
Eva "And then –"
Garrett "It's a lot more impact – "
Eva "Yea"

Garrett "- (*moves hands around*) when you're actually seeing it move around (*points to the image*) than just looking at this."

Couple 6

Being able to see their "baby" move in real-time during the scan contributed to the construction of the foetus as a person whose movements were conscious actions with the purpose of participating in the 'family' event of the ultrasound scan. The images serve as documentation of the first time that parents-to-be officially 'meet' their baby, and they engage in joint discursive work to construct this meeting. Many of the couples talked about how this image was central to their 'connection' with their future baby:

Zac "That kinda, sort of a visual image that's stayed with me anyway of, of, of um, the baby at that age."

Couple 2

Eva "(*Points to the images on the coffee table*) Because I've seen this visual representation in this way (*takes finger to her temple*) that's how I kind of (*points finger up in the air*) imagine (*takes hand to stomach*) baby."

Couple 6

Zac's use of the phrase "the baby at that age" suggests that the visualised foetus functions as a pre-born child and the ultrasound image as the start of this child's photo album (even though this would-be child's age could be stated as negative zero). As Eva articulates with her talk and gestures, the ultrasound images aid the construction of how the couples imagine their future living offspring. The image of the foetus is endowed with aspects of personhood as though it were already out in the world.

Gender was a central tenant in the construction of the baby as a future human being. Not all the couples chose to find out foetal gender, and some who did want to couldn't due to the angles of the foetus in the womb. However, as the following excerpts show, those who did talk about finding out the gender felt that it was a key part of their connection with the future child:

Tavish "We sort of said right from the start that, you know, (*looks at Audrey who is nodding*) we'd be quite keen to know what sex it was. So, and I mean [Audrey] sort of, well, from her point of view it

was, ah, a case of when you don't know the sex you don't really refer to it properly and you sort of "

Audrey "You call the baby 'it' (*face screwed up in distaste*)"

Tavish "Yea which doesn't seem right"

Audrey "The reason that we wanted to find out was (*throws her hand up in the air*) because I just wanted to know, you know, I want him to be more of a person, I want just, you know."

Couple 1

Steph "I mean it's quite hard because it, being your first child and you can't IMAGINE it. I mean I can kind of feel it a lot now and stuff. But I kind of think, maybe if you knew what it was you could imagine them a bit better."

Couple 4

Lulu "Like I think its, even thinking it's a girl and it's definitely given me more of a connection. Thinking 'oh my gosh we're going to be raising a daughter' and you, you start to think a bit different."

Couple 5

In the first excerpt, Tavish and Audrey co-construct gender as a key component of knowing their baby. Steph and Lulu also illustrate how knowing foetal gender was used to help build the image of the baby as a person and helped to construct the imagined future child, and the parenting involved. Imagining the foetus as a future child functions to construct the couples as parents already. One of the vital tasks of parenthood in a market-driven context is making the right consumption choices on behalf of your child. In this context, finding out the gender helped the couples to plan their (and their loved ones') spending ahead of time. As couple one point out:

Audrey "And even from a practical point of view. So much stuff for babies is either blue or pink. And not that I've got any, you know, wish to force a baby down a, you know, gender stereotype path. But then, conversely, you don't want to dress a little boy entirely in pink! Or a, you know, or anything like that. (*Turns to Tavish frowning*) Or it's like, the little outfits are either "fairy princess dresses" or sailor suits, there's just not a lot of neutral stuff. So to not know until the end means everything you get from people is yellow (*said matter-of-factly*). Because they can't, they don't know if it's a boy or a girl. And you can't really buy anything, and everything that comes is either pink or blue! (*Shaking head*) So you just, yea."

Tavish "Mmm. I like the idea that you can think beyond the birth as well, it's sort of like, just generally what, yea. Further in the **future**, what, <u>you know, what we're going to be doing</u>

Audrey "<u>and we want him to be an All Black, and what we need to start thinking of</u> –"

Tavish "Yea"

Audrey "- with respect to his training from a young age!"

Tavish "(*laughing*) Yea, yea, buy-buying rugby balls and stuff as opposed to, ah, yea"

Audrey "(*laughing*) Little dresses – "

Tavish "Yea"

Audrey "- and things."

Tavish "Yea, netball balls."

Couple 1

Here, again Audrey and Tavish discursively work together to construct the importance of finding out gender. They see this as a favour to their extended family and friends to ensure that their future child is dressed gender-appropriately and is guided toward gender-appropriate interests. In New Zealand these interests centre on sport, in particular rugby-playing boys as the main expression of masculinity. For many of the couples, knowing the gender of the foetus was a central part of constructing the image of their future child.

Constructing the foetus as a baby and endowing it with personhood positions the couples as parents already. The existence of the foetus as a person, and the couple as parents means that together they are a family:

Audrey "He just feels, it feels like we're a family kind of thing. Like there's, you know, we're a family of 2.5 (*laughs*) or something like 2.3 yea (*laughs*)."

Couple 1

Audrey is aware that her feelings here could open her up for ridicule. She softens her belief by adding "kind of thing" instead of outright declaring herself, Tavish and the foetus as a family. And she laughs as she acknowledges that perhaps the foetus doesn't count as a 'whole' person in the full count of family members. Nonetheless, the visual access to the foetus has contributed to her personal construction of their new family. Lulu also references family, although for her family is like the prize awaiting her at the end of pregnancy. This alludes to the notion of the pregnant couples' role to ensure they deliver a perfect product at the end of nine months of pregnancy:

Lulu "You know, knowing, I mean you get your lovely baby at the end of your hard work of nine months but, just seeing it was just so (*shakes head*), ah, reassuring as to WHY you are going through this, and there IS an end and it's your family."

Couple 5

In summary, the couples work together discursively to construct the foetal image as a person, a child who is already a viable, functioning member of their family. Constructing the foetus as a future baby works to position the pregnant couple as parents who must therefore act responsibly on behalf of their offspring. That responsibility includes tasks as important as partaking in the available technology to guarantee the foetus and future child's health, and as trivial as ensuring that once the baby is born it will have enough appropriately gendered clothing to wear and gender appropriate toys to play with.

"Why Wouldn't We Go For It?": A Discussion of the Research Findings

This research sought to explore whether pregnant couples drew upon notions of the primacy of the visual, the technological imperative and ideas of consumption and choice when talking about their experience(s) with routine ultrasound. The findings showed that the couples worked discursively together to construct the ultrasound, their pregnancy, the foetus and 'their baby' in particular ways. These were 1) constructing ultrasound as normal and commonsense; 2) constructing the pregnancy as legitimate and valid; 3) constructing the foetus as healthy and normal; and 4) constructing the baby with personhood and gender. The four constructions were indeed embedded in the broader contemporary social meanings identified earlier. The construction of ultrasound as a normal, commonsense procedure and the construction of the pregnancy as legitimate and valid only once the ultrasound has confirmed it draws on the certain understandings of what counts as the best way to know something.

Constructing ultrasound as the crucial tool for making the pregnancy *really*, *actually* real reinforces previous feminist scholars findings that the technology de-emphasises women's embodied knowledge (Duden, 1992; Hartouni, 1992; Petchesky, 1987; Stabile, 1992). This construction works well for the male partners because if the pregnancy only becomes 'true' once the foetus is visualised then the pregnant women do not have any special knowledge (power) over them. This reinforces the hegemonic nature of masculinities and the gender order, which in Western culture characterises femininity as subordinate to the superior knowledge and power of masculinity (Connell & Messerschmidt, 2005; Lyons, 2009; Schippers, 2007). Instead of the males missing out, the exclusively feminine embodied experience is re-defined as lesser to the 'real' confirmation of the public, shared viewing where both the pregnant woman and her male partner gain knowledge of the pregnancy at the same time. The couples constructed the early stages of pregnancy as a "miserable" time for the embodied woman and a "long haul" that they had to endure together. Therefore the

ultrasound images were not only proof of the pregnancy before the woman's body was obviously showing, but also served as a sort of reward for all the hard pregnancy work they had done thus far and legitimated them as parents-to-be. Ultrasound technology is accessible to the general public, endorsed by health professionals and subsidised by the government; ultrasound images are circulated widely person-to-person, via online social networking sites and in the media; these aspects of the context within which the current research is embedded yielded similar findings as Gregg (1995), Gross and Pattison (2007), and Harpel (2008) in regards to the paradox of choice that routinised technological intervention introduces. Here, ultrasound is understood not as an option, but a necessity for normal, well-intentioned pregnant couples.

Using the vision permitted by ultrasound to construct the normality of the foetus and to construct the foetus as a future baby with gendered personhood also draws from discourse that holds scientifically, technologically-gained visual knowledge as more objective and real than other types of knowledge. The visualised foetus can be measured, examined and screened for abnormalities. That the technology to do this exists in an environment where pregnancy is constructed as a risky endevour and biomedical technology as a tool to reduce risk and increase the likelihood of perfection, means that pregnant couples can (need to) consume the technology to gain reassurance of the health (normality) of the foetus. Once this is assured, the pregnant couple can work together, often with the help of the sonographer, to endow the visualised foetus with gendered personhood and bestow upon it the full potential of a future functioning human baby. The visual image is key for the pregnant couple to 'know' the baby and imagine 'the someone' who is hidden inside the woman's womb. Gaining this pre-birth knowledge, and assurances that all is so-far normal, means that the couple can begin to prepare for their future family, make the correct consumption choices on behalf of the 'baby', and inform others so they can too. Despite the pregnant couples receiving minimal, if any, information about the reasons for obstetric ultrasound before having their scans, their repeated references to the "reassuring" nature of the ultrasound reinforces previous research documenting the validation of medical intervention into pregnancy through interpreting pregnancy as an abnormal, risky bodily state (Carolan, 2008; Lupton, 1999). In

an environment with a pervading fear of foetal abnormality and disability stigma and where pregnancy is constructed as a risk, pregnant couples appear to be offered the choice to engage with routine ultrasound. But, in line with previous research on maternity-care related choices, this choice is increasingly experienced as a commonsense requirement for 'good' parenting (Burton-Jeangros, 2011; Donovan, 2006; McAra-Couper, et al., 2012).

The four constructions suggested certain positions available for the pregnant couple to take up in relation to the medical community and these positions reinforced certain ways of being and restricted other possibilities. The couples positioned themselves as responsible, 'good' parents-to-be, willing to follow the correct processes to ensure the health and wellbeing of their future child. These findings are in line with research conducted by Taylor (2000a) and Kroløkke (2011) who explored how pregnant couples use the ultrasound examination as a stage on which to perform their new roles as prospective parents. In the current research, as Büscher and Jensen (2007) also found, this often meant deferring to the 'superior' knowledge of the health professionals with whom they were in contact.

Contradicting talk about whether the ultrasound revealed an ambiguous image or an obvious baby, and whether the scan was a medical 'check-up' of the foetus or a meet-the-baby event echoed Sandelowski (1994a) and Taylor's (1998) research looking at the dual medical and social aspects of ultrasound as a hybrid practice. The contradictions present in the current research demonstrated how the couples navigated their changing roles by focusing on specific constructions of their experience. While the ultrasound is embedded in a biomedical context where they initially need the sonographers input to interpret the images, and the 'important' monitoring and measuring is done first, there is still a strong emphasis on the social aspect of seeing the baby and collaboratively constructing it as a functioning member of the family. By framing their use of ultrasound in this way, the couples' position as passive agents within the processes of pregnancy is made less problematic because it is for the higher cause of ensuring the greater level of perfection for the human they are going to bring into the world. The couples are aware of the broader notion that the healthcare system is

actively constructing their world in a particular way, but they are happy to engage with medical 'business' because by consuming the technology they get to meet their baby early.

Having the 'take home' images with them in the interviews allowed the pregnant couples to keep alive the constructions of foetal normality and foetal personhood. The couples used the image(s) as tools in their collaborative construction work. My part in this construction was that of the novice viewer, ignorant in how to 'correctly' see what the image revealed, and this allowed the couples space to articulate what they saw in the image(s) and point out to me how they interpreted what they saw. Often this involved comparing later scans with earlier ones to highlight foetal development, more defined body-parts and clearer profile shots of a face that "looks like a person". As mentioned in the previous section, this highlights how the couples used the 'take home' images to continue to collaborative over the construct foetal personhood and their future child after having their ultrasound(s).

Implications

That the ultrasound experience is used as a site, and the associated images as tools, for pregnant couples and medical professionals to construct the normality of the foetus and to imbue foetal images with gendered personhood has implications for women's reproductive rights in New Zealand. Specifically, constructions of the foetus as a normal, healthy (potential) person with human attributes may undermine women's rights to the reproductive health service of abortion. In both legal and social arenas, abortion opponents have constantly striven to conceptualise the foetus as an 'unborn child' and therefore termination of the pregnancy as murder (Duden, 1993; Norris, et al., 2011; Parker, 2011). Increased use, accessibility and routinisation of ultrasound, and the proliferation of images of the 'public' foetus, has helped progress the anti-abortion movement's goals to challenge what constitutes a viable 'person' and pitting the rights of the 'unborn' against that of the pregnant woman (Hartouni, 1992; Stabile, 1992; Taylor, 2004).

In New Zealand most women can access safe and legal abortions, but it is yet to be decriminalised. In order to have an abortion pregnant women must establish that they meet certain criteria in the Contraception, Sterilisation and Abortion Act of the Crimes Act, passed in 1977. Almost all abortions in New Zealand are authorised on the grounds that proceeding with the pregnancy would pose serious threat to the woman's mental health (Abortion Supervisory Committee, 2010). In New Zealand law the 'born alive' rule (where a foetus is not recognised as a person, and therefore doesn't have any legally enforceable rights, until it is born alive) governs the legal status of personhood, surviving repeated attempts of anti-abortion groups to establish the personhood of foetuses. However, given certain changes that are currently in process, it is important that the distinction between foetuses and born babies is sustained socially, legally and in practice. Presently the Health IT Board is progressing with the Health Identity Programme which aims to lay the foundations of a single integrated system of secure and transferable electronic shared care records (Parker, 2011). Part of this programme aims to upgrade the National Health Index (NHI) where every person who uses health or disability services in New Zealand is assigned a number, from birth or from first access. The Health IT Board is proposing formalising the assigning of NHI numbers to foetuses of pregnant women who are under specialist maternity care. As part of this national system, foetuses would become registered as 'unborn babies'. Women's Health Action, a women's consumer advocacy group based in Auckland, New Zealand, has expressed concern that that this proposal may "compromise women's reproductive rights, by inadvertently aiding efforts to establish legal status for foetuses in New Zealand law" (Parker, 2011, p. 2).

Ambiguous messages surrounding the distinction between foetuses and born babies in this particular example is one of many reasons why people involved in policy and service development need to be sensitive to issues of reproductive politics and to prioritise women's right to reproductive autonomy. As the current research shows, pregnant women actively engage with their partners and with medical professionals in the construction of the foetus as a healthy, normal human with all the potential of a functioning baby, however it is important that

this construction does not consequently reduce the personhood of the pregnant woman.

The persistent construction of ultrasound as a completely normal and commonsense activity during pregnancy, accompanied with its construction as *the* tool to confirm pregnancy, has implications for maternity care policy and practice in New Zealand in relation to notions of informed choice. Midwives make up a large proportion of Lead Maternity Carers (LMC) in New Zealand and the New Zealand College of Midwives consensus statement on informed choice states that is the midwife's responsibility to uphold every woman's right to informed decision-making (New Zealand College of Midwives, 2009). However, most of the couples reported receiving no information before they had their ultrasounds, from either their LMC or the attending sonographer/radiographer. And, as mentioned previously, only one couple (Eva and Garrett) recalled their LMC explicitly presenting the ultrasound as a choice that they could consent to or refuse. For the other couples, having an ultrasound was not presented to them as a choice, but rather as a taken-for-granted exercise and therefore something they should be reminded of, not specifically informed about to discuss options. However, there was no sense that this was particularly problematic for any of the couples. In their social context within which ultrasound is constructed as a commonsense activity, their involvement is understood as such a basic part of the pregnancy process that they almost do not notice the omission of an explicit option to refuse the procedure. As their pregnancy experience is embedded in a cultural environment where visual information is valued over other forms of knowledge, if they want to *really* confirm their pregnancy and so legitimate themselves as a pregnant couple, they have to access ultrasound technology in order to see the foetus for themselves, and get a copy of the scanned image to prove it to others.

The 'commonsense' and 'legitimacy' constructions are heavily rooted in discourses of visual primacy and the technological imperative. Understanding ultrasound and pregnancy in this way, coupled with increasing access to 3D and 4D ultrasound as the technology progresses in New Zealand, has implications for pregnant couples' autonomy and agency. An implicit assumption that the

increased clarity offered by new ultrasound technology could translate into increased diagnostic power means that pregnant couples wishing to be 'good parents' may interpret the mere existence of the technology in New Zealand as a recommendation by the medical community for its use (McAra-Couper, et al., 2012). These constructions work together to form an environment where the choice to have an "unexamined pregnancy as a sanctioned option" (Donovan, 2006, p. 400) may be undermined.

When ultrasound is understood in popular culture as a default part of normal pregnancy then those who decline to use the technology open themselves to becoming targets of negative social attitudes, being stigmatised and having their ability to be 'good' parents called into question. It seems from the findings of this research that there is little room to choose not to have an ultrasound in New Zealand and that the current social climate would support a growing industry of commercial 3D and 4D ultrasound. This is concerning given that consumers of health services often view entering the medical system as their safest option and the taking up of health professional's advice as the surest way to guarantee a positive outcome (Lothian, 2008). At present there is no legislation covering the use of obstetric ultrasound and no monitoring or auditing of its use. Outside of sonographers and radiographers, ultrasounds can also be done by obstetricians who may not have had extensive training in performing scans (Women's Health Action, 2010).

Future discussion about pregnant couples' right to choose from multiple ultrasound options needs to consider that if ultrasound technology is conceptualised as commonsense then it is deemed beyond controversy, and unlikely to be challenged. But the pregnant couples' ability to choose is not exercised in a moral vacuum (Donovan, 2006; McAra-Couper, et al., 2012). The presentation of 'choices' is embedded in particular social and political contexts (Lippman, 1999). At present the increasing options of, and access to, different ultrasound services are within an environment that places high social value on visual information, 'new-age' technology, biomedical knowledge and heterosexual couples fulfilment of their parenthood potential and the privileging of the foetus as a future (healthy, normal, gendered, able-bodied) baby. So do

pregnant couples have any other choice to perform their roles as 'good' parents other than through consuming the technology?

Considerations and Reflections on the Research Process

The strengths of this study lie in the unique approach of interviewing the pregnant women and their partners together, and digitally recording the interviews in order to visually capture how they interact with each other and how they use the scanned foetal images to construct the meaning of their ultrasound experience. Taking a social constructionist approach means acknowledging that meaning is made through social interaction (Burr, 2003), and as ultrasound is something the pregnant couples did together it was important to gather the data about their experience in a way that captured their collaborative construction of meaning and understanding. Applying an integrated theoretical lens was also a key strength of the research approach as it allowed recognition of dominant social understandings which circulate in the participants' lived world and allow them certain ways to make meaning of their experience and their position within their social context. This was also the motivation behind asking the pregnant couples to have any ultrasound images on hand so that as well as their talk about the images, their interaction with and gestures relating to the images could be recorded for analysis. This integrated theoretical foundation and inclusive research design allowed for the provision of an extremely rich source of data. It was valuable to hear a selection of views from these couples located in a major New Zealand city at a particular moment in time where 2D ultrasound is commonplace and 3D and 4d technology is just emerging as an option.

The limitations of this study are reflected in the overrepresentation of heterosexual couples. Absent from this research is a voice detailing how same-sex couples experience non-medically essential ultrasound. It would be interesting to explore how lesbian couples make meaning of the technology when both partners are theoretically capable of being the pregnant body over which the transducer moves. Likewise, it would also be interesting to explore gay couples' experiences of ultrasound when neither of the male partners experiences the embodied pregnancy.

A consideration for future research expanding on these findings would be to interview pregnant couples in New Zealand who are actively choosing to consume the more (at this point in time) rare and expensive 3D and 4D ultrasound options. Unfortunately none of the couples in the current research had experienced this technology as a provider had yet to establish themselves in the city where the research primarily took place. The couples were aware of the technology and a few mentioned jokingly that, not getting too far ahead of themselves, perhaps by the time of their next pregnancy the technology would be more wide-spread and a more serious possibility.

Another future consideration for research with a wider scope would be to take influence from larger studies done by key researchers in this field such as Mitchell (2001; Mitchell & Georges, 1997) and Roberts (née Palmer, 2009a; 2009b; Roberts, 2011) and build on the current couple interviews by including observation of the ultrasound examination, and interviews with the sonographers and the couples' Lead Maternity Carers. This type of research would involve meeting more extensive ethical requirements, but would provide an even richer source of data by gathering 'health professionals' understandings of the technology and the accompanying policy, and by providing first-hand information of how they and the pregnant couples interact. In fact Tom (couple 7) exclaimed at the end of his and Amy's interview, "If only you had been in touch earlier so you could have come along to the scan and seen for yourself!" Future research could beneficially explore views of New Zealand health professionals who offer obstetric ultrasound services about the incoming 3D and 4D technology. Have they been eagerly awaiting its presence in our country or are they dubious about what the technology offers and how the public perceives it? It may also be valuable to talk to pregnant couples *before* they go to their first scan in order to investigate 'real time' what they hope and expect to see. This could be followed up with a further interview following the birth of their baby to explore if, and how, the meaning of the ultrasound scan and their 'take home' image(s) changed.

In conducting this research there were many times when I was astounded by some of the ways in which ultrasound technology and images have been

culturally and commercially re-interpreted by the public, from private sellers offering 'baby ultrasound postage stamps' (Missphnxz, n.d), 'sonogram cufflinks' ("Sonogram Photo Cufflinks", n.d) and 'sets of 12 baby shower personalised ultrasound cupcake toppers' (Bug and Boo Designs, n.d), to artists sculpting "life-size plaster models of living embryos" (Daily Mail Reporter, 2009) and bronze casts (Goodchild, 2009), to industrial designers contributing plans for personal 'foetal visualisation devices' such as Prevue (Shiue, n.d) that strap around the pregnant woman's stomach to "x-ray your nether regions to broadcast your uterine activity" (LaMarche, 2011., para. 1) or are hand-held like Aimo – personal sonogram so the pregnant woman can capture her own photos her "child" in the womb (Young Kong, n.d). Two standout moments were, firstly, discovering a recent trend in America for "gender reveal parties" (Francis, 2011; Schuster, 2011). The sonographer writes the foetus' biological sex down on a piece of paper and puts it in an envelope. Without opening the envelope the pregnant couple pass it on to a baker who then bakes a cake with either a pink or blue cake that is then iced in a 'neutral' colour. The pregnant couple hold a party and 'reveal' foetal gender to themselves and their nearest and dearest by slicing into the cake in front of everyone. The next step in ultimate performativity is posting the video of the 'reveal' moment on YouTube. My first response to these parties was shock at how anyone came up with this idea and then discomfort thinking of how the practice reinforces narrow representations of normative sex/gender understandings. What of the foetus whose reproductive organs as visualised by the sonographer are not so clear-cut? What kind of reaction (or more likely stigma) would a purple cake receive from the audience?

While conducting the research I began to notice a few pregnant acquaintances uploading images from their ultrasound scans onto Facebook or linking to them on other social networking sites. This serves as a fast and easy way to communicate ones new role as parents-to-be with a wide audience. I was directed to a couple who had taken this not just one step but a great leap further, they had set up a Facebook profile for their 'unborn child' and were communicating in first-person as their 'daughter' through the account (Johnson, 2011). 'Marriah' attended Tummy University and enjoyed swimming – personification taken to a whole new level. This story stuck out for me as one of

my first thoughts was, how horrific if something were to go wrong during the pregnancy and this profile existed as a momento. I realised that my reaction was influenced by the pervasive construction of pregnancy-as-risk. With further consideration and after talking with some of the pregnant couples once the camera was off about these 'discoveries' I realised that my discomfort may stem from a tendency for New Zealanders to squirm at the idea of a life lived so publically. When talking about 3D/4D technology and Facebook the couples laughed and commented on the "bizarre" and "odd phenomenon" of foetal images popping up on their newsfeed, or broadcasting videos of gender 'reveal' parties online. Most of these couples figured that, outside of their immediate family and friends, why would anyone else care enough to want to see an ultrasound image of their foetus? For them, there was no need to be quite *so* public about it.

The interviews were collaborative social events and the findings of this research came about through the co-construction of meaning between the pregnant couples and myself. How did who I am play a part in collecting this specific data? If I had been pregnant during the interviews, if I happened to be a middle-aged mother of four, a practicing midwife, or a man, completely different stories may have been told to me and heard, and interpreted differently by me. As mentioned earlier I believe my youth and relative inexperience with ultrasound helped the flow of story-telling. I believe being female facilitated the pregnant women's feeling of ease at the same time as possibly making their male partners less inclined to express their views. Although I only noticed two of the male partners seemed less comfortable with divulging information about how they felt, the others were happy to freely discuss their feelings on the topic. Having completed the interview and turned off the camera, many of the pregnant couples asked me more specifically what my research was about, or what I had found so far. I would usually tell them about the more intriguing aspects of ultrasound I had encountered so far, such as the 'gender reveal' parties and the increasingly commercial venues to have ultrasound in the United States, like the local mall. The couples would usually respond in amazement and comment on how such things would never happen in New Zealand. However, most of them would then go on to consider how they "never really thought about" not going to have the ultrasounds they had had, and entertaining, even just a slight notion, of how

interesting it would be to have a 3D/4D ultrasound. I think these 'off record' conversations, and the interview itself, will contribute to these couples, not necessarily questioning their use of, and decision to engage with ultrasound, but at least contribute to deeper consideration of their pregnancy experience and the various associated 'medical' interventions.

Undertaking this research has affected how I see (know) the world. I am more ready to challenge dominant ideas of what is normal and seek out that which slips by unquestioned with a 'commonsense' label. I now begin thinking of who certain 'commonsense' understandings disadvantage, who is missing in popular representations of normality, and whose voice is silenced or lifestyle deemed wrong? I am grateful that this research process has opened my eyes and broadened by vision so that I may identify and use the privilege I have to work in future for advocacy and social justice.

Conclusion

This research has used a novel integrated approach and collaborative procedure that has highlighted valuable ways in which ultrasound, pregnancy, the foetus and 'the baby' are constructed by 'low-risk' pregnant couples using non-medically essential ultrasound services in New Zealand. The constructions align with broader social understandings that accord primacy to the visual domain, and inevitably see consuming technology as natural and commonsense behaviour. These constructions worked to embed pregnancy firmly under the authority of biomedicine, with the valuing of foetal health and personhood ensuring ultrasounds existence as a largely accepted and unquestioned step in the process of pregnancy. These findings have implications for women's reproductive rights and the understanding and practice of informed decision-making in regards to pregnant couples' 'choice' to engage with the technology.

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Appendix A: Recruitment Flyer

Low-risk pregnancies and ultrasound: Exploring couple's experiences.

My name is Jessica Glen and I am a Health Psychology student studying towards a Master of Science at Massey University. If you and your partner have a low-risk pregnancy with no complications and have had an ultrasound I am interested in talking with you.

I would like to invite you and your partner to talk to me about your experiences of having an ultrasound. If you are interested in taking part or wish to know more about the research, please email me at **jessica.glen.2@uni.massey.ac.nz** or phone me on **(04) 801-5799 ext 62466**.

Alternatively you can send the form below to:

Jessica Glen
The School of Psychology
Massey University
Wellington Campus
Mt Cook
Wellington 6140

Or please feel free to contact my supervisor Dr. Antonia Lyons if you have any questions

Email: a.lyons@massey.ac.nz
Phone: (04) 801-5799 ext 62164.

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Please send me information about the research, *Low-risk pregnancies and ultrasound: Exploring couple's experiences.*

Name: Phone:

Address:

Appendix B: Information Sheet

MASSEY UNIVERSITY
COLLEGE OF HUMANITIES
AND SOCIAL SCIENCES
TE KURA PŪKENGA TANGATA

Low-risk pregnancies and ultrasound: Exploring couple's experiences.

INFORMATION SHEET

Thank you for responding to my invitation to participate in my research. The following information is designed to provide you with some important details about the research, that you will need to know, before you decide to take part in the study.

Researcher Profile

My name is Jessica Glen and I am a student at Massey University, currently working towards completing research for a Masters of Science endorsed in Health Psychology. My supervisor for this research is Dr Antonia Lyons (School of Psychology).

What is the nature of the study?

I am interested in discussing the various factors that influence pregnant couple's choice to undergo an **ultrasound scan for a low-risk pregnancy**, as well as exploring their experience of the procedure with them.

Who can take part?

Pregnant women and their male or female partners are invited to take part in this study. Couples must have a **low-risk pregnancy** with no complications so far and have had at least one ultrasound scan. In order to participate both partners must agree to take part in this study, as the interview will be with you as a couple.

What is involved in participating?

If you agree to participate you will be invited to be interviewed together with the researcher and asked to bring anything you received (e.g. cds, images, brochures, instruction pamphlets) for/at the ultrasound procedure. I will ask you questions about your decision to have an ultrasound and the experience itself. This interview may take up to one and a half hours of your time. The interview will be recorded using video-recording equipment in order to capture fully the nature of the conversations and the interaction with the ultrasound material. The interview will be held at a jointly agreed time and place. Should you decide to come to the university campus for your interview, public travel or parking costs will be reimbursed. You and your partner will receive a double movie pass to thank you for taking the time to share your experiences.

How will confidentiality be assured?

Pseudonyms will be used when the interview is transcribed so data is anonymous. Place names and health providers will be deleted from transcripts to ensure anonymity. Information obtained from the interviews will be treated in confidence by the researcher. The only people to view transcripts will be my supervisor and myself.

What will happen to the data when it is obtained?

All raw digital video data, and transcriptions, will be stored on password protected computers of my supervisor and myself. Data will be stored for at least 5 years and destroyed by Dr. Antonia Lyons (research supervisor). Video data will be used to assist in analysis of the discussions, not for the purposes of dissemination.

Participants will be given the opportunity to view the transcripts and make any changes to them prior to analysis if they wish. Should you wish to make any comment on these, you will need to return them back to me within 14 days (2 weeks). The findings will be written up in a Masters thesis. I will provide all participants with a summary of the results once the project is complete.

How will the information from the study be used?

The information obtained from this study will be used for publication in a Masters thesis, academic and professional journals. Dissemination at international and national conferences is also possible. It will also be accessible to health care service providers, seeking to examine the provision of antenatal resources. All the information from the study that is used in subsequent publications or other dissemination forms will be anonymous and participants will not be identifiable.

What are your rights?

As a participant you have the rights to:

- Contact me prior to the interview to ask further questions about the research;
- Decline to talk about a particular topic or answer a particular question;
- Withdraw from the study at any time prior to two weeks following your interview;
- Be given access to a written copy of your transcribed interview, and have the opportunity to revise or delete any particular comments within the transcript;
- Ask for the video recorder to be turned off at any time during the interview;
- Ask any questions about the study at any time during participation;
- Provide information on the understanding that your name, or individual identifying information, will not be used;
- Be given access to a summary of the project findings when it is concluded.

Please feel free to contact either me or my supervisor if you have any questions or concerns about the research process.

Jessica Glen (Researcher)
Email: jessica.glen.2@uni.massey.ac.nz
Phone: 801-5799 ext 62466.

Dr Antonia Lyons (Research supervisor)
Email: A.Lyons@massey.ac.nz
Phone: 801-5799 ext 62164.

What do I do now?

If you and your partner wish to take part in the research, please email or phone me and we can arrange an appropriate time and place to conduct the interview.

This project has been reviewed and approved by the Massey University Human Ethics Committee: Southern A, Application 10/83. If you have any concerns about the conduct of this research, please contact Professor Julie Boddy, Chair, Massey University Human Ethics Committee: Southern A telephone 06 350 5799 x 2541, email humanethicsoutha@massey.ac.

Appendix C: Consent Form

MASSEY UNIVERSITY
COLLEGE OF HUMANITIES
AND SOCIAL SCIENCES
TE KURA PŪKENGA TANGATA

Low-risk pregnancies and ultrasound: Exploring couple's experiences.

PARTICIPANT CONSENT FORM – INDIVIDUAL

I have read the Information Sheet and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I agree/do not agree to the interview being video recorded.

I agree to participate in this study under the conditions set out in the Information Sheet.

Signature: ..... **Date:** .....

Full Name - printed .....