The Meaning of Biomedical Technology for Pregnant Women within the New Zealand Context.

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Abstract

This thesis is interested in critically exploring the meaning of biomedical technology from the perspective of pregnant women, relative to their pregnancy and childbirth (PCB) healthcare and the factors surrounding these constructions. Currently there are significant structural changes occurring within biomedicine and western society that have implications for pregnant women as healthcare users. Accompanying these changes is the introduction of new forms of PCB technology. However there is a lack of knowledge about the mediation and subsequent consequences of these social, psychological and cultural events for pregnant women in New Zealand. Comparatively speaking, interest in the social and psychological context relative to health related behaviour is gaining popularity within mainstream health psychology (Lyons & Chamberlain, 2006).

This research was guided and examined using a Foucauldian Discourse Analysis approach. I interviewed ten pregnant women about the meaning of biomedical technology, the influences and the consequences of the technology. Subsequently six discourses were identified after analysis of the transcripts. These discourses included morality, biomedicine, consumerism, risk, the good mother, and naturalism. Overall, the analysis revealed that the women constructed technology as a beneficial tool for use during PCB healthcare because it provided assurance and knowledge. Concurrently though, it was also constructed as harmful, dangerous, stressful and unwanted in some cases. The women essentially framed technology in ways to justify and normalise their use and acceptance of technology during their PCB healthcare. Consequently, the discourses positioned the women as moral and rational actors in relation to their construction and use of technology. They framed themselves in the role of the good mother, to take care and protect their child through pragmatic technological practice.

In summary, constructions around technology were shown to be locatable within a problematic healthcare context that has a strong, social mediation. Women were in support of using technology in spite of concerns around the effect of the technology.

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List of Abbreviations

ART	Assisted Reproduction Technology
D & C	Dilation & Curettage
FDA	Foucauldian Discourse Analysis
IVF	In Vitro Fertilization
MSS	Maternal Serum Screening
NT test	nucal tubal test or nucal fold test
PCB	Pregnancy and Child Birth

Chapter One   Introduction

"...health psychologists are seriously reflecting on their discipline and attempting to articulate theories and methods so that they can participate in the broader movement for social justice and health." (Murray & Campbell, 2003, p.235).

"How have certain kinds of interdictions required the price of certain kinds of knowledge about oneself? What must one know about oneself in order to be willing to renounce anything?" (Foucault, 1988, p.16)

I start with a brief reflexive account regarding why I developed an interest in social and psychological matters relating to health.

On a personal accord, I am keenly interested my own health and ongoing relations with western healthcare as a resource for achieving better health. My subjectivities as a young Pakeha female who draws on biomedical practices and understandings, makes me very aware of the pressure to be invested in my health as part of good healthcare practice. This is reflected in my care around daily practices that I link to better health outcomes such as losing weight, becoming fitter and feeling better. These practices and understandings take on different forms such as ingesting a vitamin tablet, buying women's magazines that have sections on improving health, searching via Goggle for answers in reaction to a sore Achilles tendon, using medicated shampoo, drinking two litres of water per day for hydration, or going to a Yoga class. Subsequently, I am frequently reminded of the link between health, absence of disease, and my identity. It

echoes Lupton's (2003) appraisal that "self-control and self-discipline over the body … (it has) become the new work ethic" (p.35). This vigilance has profound consequences in terms of reorganising how I see myself and how I go about looking after myself.

My health management is mediated in terms of control over knowledge and behaviour, but is placed within a larger cultural and social background that allows for certain ways to see and to be. Furthermore my health is subject to change, dependent on dominant science and social norms. "Subject and object always come into existence together in a reciprocal process" (Easthope, 1990, p.76) is one way of understanding how health is mediated within other social, political and cultural lens. In particular, I am intrigued by the growing social and cultural emphasis on healthisim whereby it is important to not only live in the absence of disease and be healthy, but to place an imperative on optimum health (Crawford, 1980). Another example of socially mediated health related behaviour that is of interest to me is fetishist adherence to diet fads.

Due to these growing critical turns in my perspective, I have become more aware of power relations at work in healthcare over ownership of health and identity.
In particular, healthcare allows people to be judged as moral beings in the context of their health related behaviour. These developments are problematic due to the jurisdiction afforded to biomedical healthcare and associated dominant positions in western society. Due to the centrality of health and people's approaches to health in western cultures (Lupton, 2003) the consequences of these political movements can affect large numbers of people.

In concordance, I also have an interest in Eastern cultures and their healthcare approaches, particularly Hatha yoga and Ayurvedic healthcare practices. Subsequently, I enjoy being able to step out of my culture to 'see' the western cultural systems in place from a distanced perspective. These insights encouraged me to look into research problems interested in the social and psychological context of contemporary western healthcare with an idea of the multiple layers at work across time and space. The pivotal Dahlgren and Whitehead 'layers of

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causation' healthcare model (1991) didn't just make sense; it resonated in me due to my greater appreciation of health. This model revealed the subverted orthodox views that reduce health to the level of the individual and also dislocated health from the social, cultural, embodied and historical context.

Consequently, I got angry. Although the value of scientific neutrality has been valued within orthodox psychology research as routine practice (Murray & Campbell, 2003), by taking that position I believed I would be reinforcing the very dogma and social control that I was trying to disrupt. I was directed into finding ways to deconstruct these subverted powers at work within health. Although I recognise the value of institutions, I believe we need to question the assumptions society has in regards to medicine and scientific value of truth within healthcare. Lyon and Chamberlain (2006) have also commented on this pragmatic need for researchers to be aware of what exactly are they critiquing in regards to institutional influence. My basis for engaging in bio-politics is neatly summarised in the following passage by Parker and Shotter (1990, p.4)

> For this we feel, in the end, is the subject matter of politics: a struggle to do with the scarcity of opportunities to be someone, i.e. of opportunities to speak about who and what one is, and about what one feels one needs in one's future in continuing to be oneself, and to have what one says taken seriously and responded to by the others around one. Only in such circumstances, in which one can play an influential part of determining one's own future, can one be said to be leading one's own life and not to be oppressed.

Consequently, due to my political awareness of social and cultural factors involved in western healthcare and engagement with health on a personal psychological level, it was highly foreseeable that I would merge these interests within my academic research. Essentially, I decided I would like to investigate possible social injustices within a given research problem focusing on medical institutions, people and their health.

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In the proceeding chapters I will contextualise the research problem, and then introduce the research question that is drawn from this problem.

Chapter 2   Research problem

"For the globalizing tendencies inherent in the dynamics of modernity connect the local and the intimate with events far flung in space and time – and in a much more complex fashion that was ever the case in previous history" (Gidden.,1989, p.252).

The research problem is concerned with consequences of the symbiotic relationship between pregnant women and biomedical technology. Therefore, in order to understand the dynamics of this research problem, the greater social-cultural context and historical background will be explored. In the next few sections, significant agents, structures, processes and events will be introduced to provide a background for the context that informs understandings around biotechnology. In particular, social and technological changes within contemporary healthcare and the evolving relationship between the pregnant woman, biomedicine profession and biomedical healthcare are investigated. The focus will be to identify and deconstruct the shifts at work on multiple levels, within a dynamic context, and the consequent repositioning and experience for pregnant women in relation to new technologies and social forms. These complex deliberations will eventually provide the basis for the thesis research question.

2.1 Changes in biomedical healthcare

The end of the twentieth century heralded shifting dynamics within the complex, evolving relationship both within and between biomedicine and Western society (Clarke, Shim, Mamo, Fosket & Fishman, 2003; Conrad, 2005; Locke, 1988; Lupton, 2003). In particular, the introduction of new biotechnologies, reorganisation of the biomedical industry, and radical social and psychological shifts within biomedicine and society, has created unprecedented change within western healthcare over the last thirty years (Ballard & Elston, 2005; Broom, 2006; Conrad, 2005; Purdy, 2001). The new movements have collectively ushered in a markedly dynamic context of technologies and social processes for people to navigate in relation to their discursive practices around modern health and healthcare. Essentially the relationship between people and biomedicine, here conceptualised as an institution, a practitioner and a healthcare approach, has become increasingly complicated. These changes are produced by not only biomedicine, but social norms, expectations and practices (Beck, 1992). Accordingly, new forms of technology are socially and historically locatable within a socio-technical relationship (Martin, 1999), and are therefore contextualised dependent on social and cultural norms.

These new changes and accompanying challenges within society have not gone unnoticed by key social theorists such as Clarke (2003), Conrad (2005), Foucault (1975), Fox (1993), and Rose (2007a). Pierre Bourdieu devoted his last lecture course at the Collegé de France to explore the problems surrounding the regression of science. He echoed similar theorist sentiments around the eroding social mechanisms that protect the disciplines autonomy from a variety of sources. Essentially;

> ...submission to economic interests and to the seductions of the media threatens to combine with external critiques, and internal denigration, most recently presented in some 'postmodern' rantings, to undermine confidence in science, and especially in social science. In short science is in danger, and for that reason it is becoming more dangerous (2004, p. vii).

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He notes that these regressions are particularly primed for impact within areas that are commercially exploitable, which include medicine and biotechnology (Bourdieu, 2004). There is intense pressure placed on biomedicine from these new commercial agents for structural gain and therefore commercial exploitation within healthcare (Conrad, 2005; Conrad & Leiter, 2004; Rose, 2007b). Kaufman & Morgan (2005) in their comprehensive medical anthropological overview of bio-politics and bio-capitalism identified "...biomedical techniques and the economic structures that legitimize them and make possible the extension of life and prolongation of dying. In the process techno-scientific industries and practices are creating new forms of life, liminality, knowledge and social organization..." (p.333). These changes will have ongoing consequences for society and healthcare in terms of re-orientating constructions around health, illness and selfhood in line with social and political progression.

The link between economics, stakeholders and availability of biomedicine such as technology, is inherently open to politics and, for example, necessitates collaborative groups such as The National Institute for Health and Clinical Excellence to give evidence-based decisions regarding funding and availability of resources for the Great Britain public health care system (Milewa, 2006). The increasing presence of private entrepreneurs with right wing ideologies have been accredited with driving structural change in biomedicine for commercial reasons. For example Stolt and Winblad (2009) identified these dynamics and agents at work within Swedish elderly care systems that were traditionally catered to by an extensive public sector under governmental dominance. Furthermore the magnitude of entrepreneurial business in healthcare can be seen in the United States of America where the pharmaceutical industry spends more than $11 billion dollars a year on marketing their products, and annually $5 billion dollars primarily for support of the sales representatives that target medical institutions (Black, 2004). Other western countries that are undergoing similar commercialisation and de-professionalisation of medicine, such as New Zealand, are subject to these economic and social movements as well.

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Neo-liberal movements at work within society are also developing social and cultural movements that encourage people to reposition themselves as autonomous, rational consumers relative to their health. For example Waldby (2006), in her analysis of umbilical cord blood banking, gives a detailed account of how this particular technology is attractive to "clients" which engenders a new form of patient-consumer, based on "a domain of neo-liberal values, organised around the virtues of private property, entrepreneurial investment and technocratic progress … with a form of popular participation in the open ended promise of commercial biotechnology" (p.56).

These monumental influx changes that fold and collide with one another giving rise to new positions and subjectivities are understandable because "Cultures are ultimately grounded in interaction" (Fine, 2006, p.1). Furthermore, because these transgressions span from structural to micro level in terms of influence, they are positioned to have dramatic consequences for practices and beliefs within western healthcare and, under the context of globalised western healthcare, post-colonial non- western cultures as well (Brown & Bell, 2008).

In summary, social and psychological change is occurring on multiple levels both within and outside biomedicine and society in relation to healthcare practices and new forms of technology. Due to co-articulation, these new technology forms and associated social and psychological norms are co-constructed within the relationship of society and biomedicine. And finally, these effects have wide implications over time culture, and location due to the encroaching nature of globalised western ideology and biomedical discourse.

2.2 The historical relationship between Western biomedicine and society

Historically, biomedicine and society has a long symbiotic relationship (Lupton, 2003, Locke, 1988). The dominance of biomedicine within healthcare has particularly accelerated since the enlightenment period, with subsequent

privileging of medicine and science as the legitimate holders of truth (Foucault, 1975; Fox, 1993). These developments essentially institutionalised biomedicine within western society alongside law and religion. Consequently, the biomedical institution has been able to develop into a medical industry (Relman, 1980).

This positioning has reified medical ideology with considerable power and is replicated on different levels concerning society and culture. The medical practitioner for example, as an agent of biomedicine, enjoys a dominant position over healthcare consumers (Foucault, 1975). People also self govern themselves through their own practice as well due to the entrenchment of medical subjectivities on the individual level (Lupton, 2003). While biomedicine is a dominant healthcare approach within western societies, it also has been adopted and criticised as a form of cultural imperialism by non-western societies (Mohammed, 2006). These transactions illuminate the contested terrain of the relationship between people and biomedicine Furthermore, the expansion of medicine within practice and understanding around healthcare is a considered one. The dominance of biomedicine within the relationship is intriguing in that the positioning has remained stable over the last one hundred years.

> In this sense, doctors have become the secular priests of late modernity and a fixed point of reference in an increasingly uncertain world. As such, medicine may be more insulated than other social institutions from the ramifications of these broader social processes and changes (Williams & Calnan, 1996, p.1618).

This speaks to the ability of biomedicine to resist and re-adapt to social and cultural influences that resist the biomedical hegemony.

In summary, although biomedicine has been arguably unprecedented in terms of maintaining position within western society, and still remains dominant, this legitimacy is becoming increasingly questioned.

Building on the historical context, it is important to recognise the role of situated

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knowledge and social and cultural transgressions on the micro level in giving weight to medical power. Janes (1999) has an interest in the situated relationship between biomedicine and indigenous cultures where biomedicine has achieved "enormous structural power and professional sovereignty" (p.1803). This research project is of interest for the current study due to a mutual interest in the role of social politics and culture within healthcare reforms. Janes (1999) focused on Tibetan negotiation of the westernisation of their health in relation to their indigenous medicine. In comparison, western women and their ongoing relationship with technology and medicine face similar relations and challenges. This is because they too can be framed as a cultural minority in the face of hegemonic discourse. Both groups of people are active negotiators of new approaches and forms of technology, within a context of disadvantage and power differentials. Janes (1999) further elaborates on the role of medical pluralism by Tibetan people. Although medicine may be structurally dominant in a specific setting for these people, "…it does not displace indigenous, non-biomedical alternatives" (p.1803). These actions further illuminate the role of the context and negotiation within the construction of knowledge around new forms of healthcare.

The historical and social context is also relevant for comprehending biomedicine. For example Fox (1993) warns against equating healthcare professionals, due to their scientific veneer of objectivity and neutrality values, as somewhat immune to social discourse within their work. Empirical research done by Nurok and Henckes (2009) investigated decision making regarding patient care within pre-hospital emergency services in Paris and New York. They found there was ongoing negotiation between social value, technical value (the priority of action), medical and surgical value, heroic value, and perfection and competence value by the emergency physicians in order to create a hierarchy of care for the patients. While social value was acknowledged, according to the practitioners, it must be placed within a hierarchy of other values to give weight to decisions which includes technological intervention. These findings illuminate the need to contextualise biomedicine and healthcare practitioners beyond dominant views of them as clinical, calculating or scientific actors. The social discourse although covert, is made 'available to professionals' (Fox, 1993, p.4). This insight into the

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perspective of the healthcare professional is of relevance for this study because it shows technology can be appreciated within a hierarchy of values.

Pregnant women are of particular interest as a group of healthcare consumers. This is due to the emphasis in western society for pregnant women to seek out healthcare in relation to pregnancy and child birth (PCB) healthcare. PCB technologies are biomedical tools that provide diagnosis, screening and treatment for women in the context of pregnancy and childbirth healthcare. Examples include the antenatal scan, a stethoscope to listen to the heartbeat of the mother and genetic testing for Down Syndrome in the pregnancy. Currently, new forms of PCB technologies are in the midst of contemporary debates surrounding new forms of technology as a whole. For example, Getz and Kerkengen (2003, p. 2054) investigated the ethical consequences around the use of ultra-scans to detect foetal chromosomal aberrations. They concluded that, on review of biomedical literature, there are several problems with allowing foetal imagery to proceed without due social and ethical consideration. Firstly, the practice of routine screening has caused profound harm to expectant parents and unborn children based on erroneous interpretations; secondly, implementation of advancing technology has orientated obstetrics and prenatal clinicians to engage with a unprecedented nexus of social values, medicine and culturally defined meaning around these new forms; and finally technical advances challenge traditional ideals around the neutrality of scientific knowledge production. In summary, these findings place a pressing emphasis on further discussion and education of ethical considerations around new foetal imagery forms, due to the complex interplay between pregnancy, healthcare and new forms of technology.

Pregnant women are also positioned to be engaged with ongoing feminist debates due to a "patriarchal model ... that defines pregnancy as inherently pathological" (Cahill, 2001, p.334). They are also positioned to be reflexive around contemporary problems such as medicalisation of health and ownership of the female body, due to their engagement with biomedicine as part of PCB healthcare. Due to the conceptualisation of pregnancy as a risky state of being, there is a social and moral value to behave in highly rational ways to deal with the

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uncertainties surrounding the pregnancy. Carrying a child also means the women become open to social commentary on their pregnancy practices, as part of a general claim over unborn children as the future of society. Pregnant women are consequently positioned to be engaged in PCB healthcare practice, and correspondingly, engaged in contemporary social and psychological norms surrounding PCB healthcare. Pregnant women engaging with new forms of technology are then potentially able to provide commentary not only on pregnancy and technology, but also on progressive social processes as well.

2.3 Contemporary social and psychological processes

There are three particular social processes that are influential within healthcare discursive positions and practices. In the following paragraphs, these three processes termed medicalisation; biomedicalisation and technologisation will be introduced and reflected on.

2.3.1   Medicalisation

Medicalisation is an applied theory that was developed during the 1970's by sociologists in response to inequalities within healthcare. The definition of medicalisation is complex (Metzel & Herzig, 2007), due in part to the highly integrated nature of the process. Conrad gives a relatively neutral definition of medicalisation. He argues that medicalisation is a process that constructs,

> ...a problem in medical terms, using medical language to describe a problem, adopting a medical language to describe a problem, or using medical framework to 'treat' it. This is a socio-cultural process that may or may not involve the medical profession, lead to medical social control or medical treatment, or be the result of the intentional expansion by the medical profession (1992, p.221).

Given the nature of this medicalisation, it is a highly dynamic process manifested

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by a variety of agents. Contemporary agents include consumer-patients, medical professionals and institutions, and increasingly commercial parties such as multi-national drug companies (Conrad & Leiter, 2004). Medicalisation has been judged a feminist issue because "women, along with other marginalized people, are particularly disadvantaged by it" (Garry, 2001, p.263). Over time medicalisation has also extended across a broad range of phenomenon past medical boundaries into health, moral and social areas. This expansion can be understood as manifestations of institutionalised medical discourse, rather than overt social control within the public. Zola (1978, p.487) comments on the nature of this expansion of medicalisation. It is "...largely an insidious and often undramatic phenomenon accomplished by 'medicalizing' much of daily living, by making medicine and the labels 'healthy' and 'ill' *relevant* to an ever increasing part of human existence." Some recent examples of medicalisation include sexual disorders, maternity care or alcoholism and even daily life itself (Conrad, 2007) People will mediate new forms or directions of medicalisation depending on their position and agency. This will have consequences in terms of altering forms of medicalisation, and can therefore be socially and politically significant. For example, contemporary critics of medicalisation and doctors as proponents of medicalisation, has led in part to de-professionalisation of biomedicine (Rose, 2007b).

Medicalisation has been courted by controversy due to the politics that accompany the process and outcomes. It "diminishes lay people's capacity for autonomy in dealing with their own healthcare" (Lupton, 1997, p.96). However there is a need to address the complexity surrounding patient agency within medicalisation because it is highly mediated. For example Foucault recognised that medicalisation as a form of power has productive and positive qualities for the seduction of patients, as well as recessive ones (Lupton, 1997). In particular the benefits of medicalisation for patients include access to social advantages. An example of this is people such as alcoholics having access to stereotypical roles and behaviours attributed to patients such as nurturance or compassion of the sick.

Essentially the growth of medicalisation in combination with a decentralisation of

biomedical professional jurisdiction indicates the changing nature of biomedical healthcare. As the biomedical profession and patients undergo social and technological change, this has altered the context and therefore the constitution and outcomes of medicalisation as well. Conrad (2005) comments on these factors causing the changes. "The engines behind increasing medicalization are shifting from the medical profession, inter-professional or organizational contests, and social movements and interest groups to biotechnology, consumers and managed care organisations" (p.10).

Consequently, a new emergent social form of medicalisation has emerged with significant consequence for healthcare consumers, including pregnant women.

2.3.2   *Biomedicalisation*

The new social process was termed biomedicalisation in recognition of its roots in medicalisation, with a new direction in biomedical science. Sulik (2009, p.1059) comments, "The biomedical model of disease ensures that new definitions, practices, and controls will emerge to strengthen medicalisation ... High technology has produced a shift from disease and cure (medicalisation) to choice, enhancement, and risk (biomedicalisation)." Essentially, it evolved out of the changing relationship between biomedicine, consumers and other corporate industries, introduction of new technologies stepped in science and revolutionary changes in jurisdiction between biomedicine, the public and new corporate industries (Clarke et al, 2003). Biomedicalisation can be characterised as, "... the increasingly techno-scientific, complex, multi-sited, multi-directional processes of medicalization and it is the encompassment of the biological aspect that is now transforming the twenty-first century" (Clarke et al, 2003, p.166).

It is a highly reflexive social process responsive to the changing nature of contemporary biomedicine. Clarke et al (2003), in a seminal article, discussed the manifestation of biomedicine within five major interactive processes. Briefly these processes include the politic and economic; the focus on health itself and

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elaboration of risk and surveillance biomedicines; the techno-scientisation of biomedicine; transformations of biomedical knowledge production, information management, distribution, and consumption; and finally the transformations of bodies and production of new individual and collective techno-scientific identities.

There is also debate surrounding what separates biomedicalisation from medicalisation. Conrad (2005) argues that the change is tantamount to shifts within medicalisation whereas Clarke et al (2003) argue it is a transformation of medicalisation.

> The shift from medicalisation to biomedicalisation has allowed biomedicine to increase medical jurisdiction, from exerting clinical and social control *over* particular conditions to an increasingly techno-scientifically constituted biomedicine capable of effecting the *transformation of* bodies and lives (Clarke et al, 2003, p.165).

Biomedicalisation or variations of medicalisation will therefore be altering contemporary biomedical practice, institutions and relationships with the public, the biomedical industry and other interested agents such as government, media and academia. Academic research interested in the impact of biomedicalisation has been performed over a range of topics. These include aging (Kaufman, Shim & Russ, 2004), alcoholism (Midanik, 2004), animal biotechnology (Rock, Mykhalovskiy & Schlich, 2007), lesbians and reproductive practices (Mamo, 2007) and maternity in India (van Hollen, 2003). Obviously, biomedicalisation is therefore positioned to be influential across a broad range of phenomenon as we become increasingly engaged with it.

2.3.3   Technologisation

The growth of technology and science within daily life has characterised the 20th

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century. This has occurred due to an insidious emphasis to utilise technology in every domain of life within a consumer driven society with a high demand for technology forms. A technological imperative has thereby developed whereby "all things scientific must be pursued without question" (Koski, 2005, p. 267). Health perceptions and behaviours are accordingly positioned to be influenced by these social and technological developments. People in the past have mounted successful opposition to technologisation movements. For example public control of funding the United States impacted in the progression of the Human Genome Programme (Koski, 2005). Resistance by the public was based on pivotal ethical, social and legal elements in regards to the progression of genetic research with constructs that were significant such as life and co-modification of health. These arguments must be considered when understanding how people make meaning of technology.

2.4   *Pregnancy and Child Birth technology*

Pregnant women face complicated decisions when coming to terms with technology relative to their PCB healthcare. Women are expected to act in the best interests of their unborn children. Due to the reliance on technology as part of western healthcare, this means women must contemplate technology as potentially part of their PCB healthcare. Consequently their constructions around the meaning of technology are an important component because these will foster understandings and subsequent directions and use of the technology. As part of these constructions, due to their positions and subjectivities, the women draw on a range of discourses to make sense of the technology. These practices potentially have implications for the women and their healthcare.

In a recent Lancet (2004) editorial, rather pithily titled 'Pre-implantation genetic diagnosis – for or against humanity', an overview of the ethical and social factors was given in regards to this new form of pregnancy technology. Critics argue this new form of pre-implantation genetic diagnosis technology creates a fraught pathway to designer babies based on blue eyes and blond hair with desirable

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behaviour traits; it is in essence the new eugenic industry. Clinicians on the other hand, argue for the pragmatic value of screening technology to prevent unnecessary disease and abortion. The debates are complex and morally laden with tremendous consequence for healthcare and people engaged with these moral debates.

As a consequence new pregnancy technologies are often associated with socially taboo movements. This controversy adds to the understanding and can amplify fears and concerns for women around technology ideals as a whole. Furthermore all forms of technology carry social meaning, but some contemporary forms are more controversial than others. In particular, contention around certain forms of technology is magnified if it is judged to be against religious and existential beliefs. Examples of these problematic technologies of use within pregnancy include genetic screening and treatment (Finkler, Skrzynia, & Evans, 2003), technological induction of birth (Westfall & Benoit, 2004), prenatal screening such as ultrasounds (Getz & Kirkengen, 2003; Markens, Browner & Press, 1999), Caesarean sections (Béhague, 2002), cord stem cell technology (Waldby, 2006), and Assisted Reproduction Technology such as In Vitro Fertilisation (IVF) (Birenbaum-Carmeli, 2004). These forms once firmly in the realm of science fiction are increasingly being used as a matter of routine PCB healthcare. Due to the ongoing lack of resolution with some groups within society, further conflict and public engagement over these new forms is to be expected. This will further problematise the social context from which pregnant women draw on in their construction of PCB technology.

Using genetic medicine as an example of the many new forms of PCB technology, I will illustrate the advantages and controversy surrounding new forms of technology that pregnant women must negotiate. Genetic medicine offers numerous medical benefits such as promising, "..great advances in alleviating disease, prolonging human life and leading us unto the medicine of the future" (Finkler et al, 2003, p. 403). However the promotion of it and the ensuring normalisation comes with a compromise. For example overzealous use of genetic application with healthcare will reduce the multilayered nature of health and

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people to the genetic level. Hubbard (1993, p.17) elaborates, "It is important we do not fall prey to this imperializing of human experience by viewing it all through the lens of genetics, which really is one of the narrowest foci to define our biology, not to mention what our social being is about". Primarily, the area of genetics is dealing with what some people believe is the essence of life. Therefore the scientific treatment of genetics has been deemed sacrilegious by a variety of people from different cultural and ethical backgrounds because genetic science is exploring, and in their view exploiting, areas that are profound in nature to them (Bainbridge, 2003). The new genetics is therefore being positioned as a potent shaper of how consumers and biomedicine embody health in the present and not too distant future. Due to this wide ranging potential for controversy, it is important for society to understand and process the concerns of these developments.

Current genetic testing and research is interested in developing procedures that can determine genetic information. These developments are of particular importance relative to decisions around family reproduction and psychological reactions. Reeve, Owens and Winship (2000) conducted a thematic analysis study concerning of a group of New Zealanders who had taken a genetic test for a type of bowel cancer. In relation to my area of my study, it is worth noting that technology, in their study, had meaning for not only the individual, but for the family as well. For pregnant women undergoing screening, this can potentially have a psychological consequence due to the emotions involved with illness, health and family.

The importance of this scientific revolution is profound because it has a profound potential to influence how people understand health, illness and behaviour for themselves. As public and expert understanding unfolds through the development of technology mediated PCB therapy and research, there is much at stake in terms of what is understood or believed and accordingly, what is allowed by society as a whole.

2.5 The contemporary New Zealand pregnancy healthcare context

In the following section, a discussion of the contemporary New Zealand context in relation to PCB healthcare approaches, PCB technology forms and antenatal care and classes will be discussed.

2.5.1 PCB technology in New Zealand

There are many different technology forms and practices in New Zealand. It is important to consider that in addition to the variation in types of technology, access to technology varies relative to the location of the women and whether the technology is only available to those with the means to be under private healthcare (Stone & Austin, 2006). Technology forms used by medical practitioners can be divided into screening and assessment technology, such as Down Syndrome amniocentesis procedures, stethoscope, ultra scans, and pregnancy blood tests, Assisted Reproduction Technology (ART) such as In Virto Fertilisation (IVF), and child birth technology such as analgesia and forceps, or surgery procedures utilised during miscarriage or abortion. These technologies are provided by a range of healthcare professionals', including midwifes, General Practitioners, Obstetricians and Gynaecology specialists, nurses, and allied healthcare providers such as physiotherapists. Practitioners from unorthodox healthcare providers also have their own technologies which they use with pregnancy healthcare, such as homoeopathy and herbal remedies to prevent pregnancy nausea or Traditional Chinese Medicine acupuncturists who are utilised by women wanting to regulate their reproductive cycles for pregnancy conception.

There has been previous research interested in the impact of specific technologies within the New Zealand context. For example Forbes (2008) investigated arguments around a national antenatal screening programme for Down Syndrome in New Zealand. There are several social and ethical considerations of technology as a result of her study. She proposed that while it was important for women to be educated in regards to risk for health concerns during pregnancy, it was also of

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"vital importance that women are able to make informed choices about the level of information they wish to receive, and that informed consent is sought before any medical procedure is conducted" (p.90). She also noted the concern with a national screening programme due to an increased risk for medicalisation and reduced ability to "question the value of medical information and place their trust in personal and cultural knowledge structures in relation to pregnancy" (p. 90). The complex terrain of decision making in regards to technology was reflected on as well. She noted that, "far from providing reassurance and control to parents, … suggests that screening can often increase anxiety of prospective parents and further distance pregnant women from the notion that pregnancy is a routine life course experience'" (p.90). By extension, these qualities surrounding information mediation, and consequential decisions are key for women to make sense of screening technology which is a key part of PCB technology.

2.5.2 PCB healthcare approaches in New Zealand

Broadly speaking women in New Zealand can chose between medical and natural approaches or a mixture of the two in regards to PCB healthcare. There is publicly funded care in the form of antenatal classes and care, and people can also pay to go through private specialist care.

2.5.3 Antenatal care and classes

The majority of pregnant women receive their education about technology from antenatal classes in the New Zealand context (Essex , Counsell & Geddis, 2008). It has been shown that there is variability in terms of access to antenatal classes. For example, Pacific Island women in South Auckland have been identified as

low attendees of antenatal classes (Low et al, 2005). Consequently, these women may not be accessing education about PCB technology, and as a consequence this could be problematic for the pregnancy.

Antenatal care and classes provide education and subsequent normalising of PCB technology. It will therefore be useful to understand how healthcare professionals perceive expectant women and their expectation as healthcare educators. Svensson, Barclay and Cooke (2007) interviewed 73 health professionals in regard to their perception of the learning needs of expectant and new parents undertaking antenatal education in Australia from a critical perspective. Due to cultural similarities between the two countries, it will be possible to draw on the findings relative to the New Zealand context. They found health professionals were reluctant to change their practice and that there was an apparent level of control over expectant and new parents learning whilst under expert care. The specialist education devalued an appreciation of pregnancy and birth in a holistic sense, and consequently, it was a barrier to providing effective antenatal education, and tellingly, health professionals were unable to spontaneously make recommendations for antenatal care. This lack of willingness to progress is symptomatic of professional adherence to institutional discourse.

This perspective is important because it illuminates the problems facing women in terms of the provision of knowledge, and direction of their education in regards to PCB technology. If the women want to employ a different perspective than their educator, then they may face resistance by those deemed antenatal experts. This positioning further generates power imbalances within the relationship between women and their healthcare providers. Accordingly, pregnancy and PCB healthcare can become a problematic space for women to contend with in relation to PCB knowledge and practices.

Furthermore how will healthcare educators, already acknowledged as resistant to change in practice or knowledge, be prepared to foster different approaches to PCB healthcare as offered by new critical research or from the women themselves?

In summary, healthcare professionals and mothers draw on biomedical discourse that privilege the medical view of PCB within the Western context. There are positive values by taking on dominant discourses, such as assurance and labelling of the unknown during a time of uncertainty but, however, medical perspectives come with accompanying values that foster subjectivities that have reductionist tendencies for pregnant women. Women and PCB therefore become medicalised and even worse pathologised, (Chervenak & McCullough, 2005). Unfortunately, in PCB healthcare, "women's autonomy continues to be violated through both quite subtle and overt discourse and practice" (Cahill, 2001, p.335). Overall, women face a highly contentious space to navigate in relation to understanding PCB technology.

2.6 *Previous Research*

The purpose of this section is to provide an overview of past research interested in pregnant women, PCB technology and emergent forms of medicalisation. Literature reviews have been criticised within qualitative research due to the problems surrounding researcher bias and methodologies that are particularly open to bias in the event of an unreflexive researcher. Although I accept the inherent problem in engaging with the research problem on an intimate level before material collection and analysis, I believe it is a necessary compromise in order to have an informed and therefore, better formulated research project. Merse and Field (1995) comment on the levels of literature engagement in relation to qualitative research, and based on this overview I would place my level of intent as moderate in terms of critically understanding and drawing on the main sources of research available. Due to the emphasis on the in-flux nature of social life, I am aware of the need to acknowledge past research as a "guide" (Merse & Field, 1995, p.46) for research conception, rather than something more rigid and exhaustive.

2.6.1 *Factors influencing pregnant women in relation to PCB technology*.

There has been previous research interested in pregnant women's perspectives, attitudes, beliefs and perceptions in relation to specific types of technology. In the following passages, social research interested in ultrasounds, IVF, caesarean, technology as examples of significant new technologies are discussed. Studies interested in technology in general and pregnancies are also discussed.

Hyde (1986), in an earlier study interested in interviewing pregnant women's about their attitudes to ultrasound scanning, identified that social and psychological implications for pregnant women regarding the use of the diagnostic ultra-scan were significant, and also that pregnant women had a different perspective of scanning dependent on their healthcare approach. Williams et al (2005) interviewed fourteen pregnant UK women who had used innovative screening scans for foetal abnormalities. They found all but one of the women described the ultra-scan in positive ways but that it was also a space for ambivalence. Furthermore although the study was focused on the woman, their experiences with technology were locatable within a larger social context. Ethical aspects around placing PCB technology decisions as the responsibility of the woman, within the context of risk were also identified as a concern. Due to ongoing normalising of screening, there was a need to adequately understand the women and their processes before legislating PCB national screening practices. Finally, there were psychological and social costs, including termination, involved for women in the event of a positive screening,. Due to the ability of screening to bring into being the foetus and accordingly effect relations between the mother and the foetus, there is clearly a need to give credence to the consequence of technology.

These findings in relation to prenatal screenings acknowledge the highly nuanced nature of PCB healthcare. Garcia, Timmermans, and Leeuwen (2008) interviewed fifty-nine Dutch women that had either agreed or disagreed to a prenatal screen. They found knowledge in regards to screening was associated with a desire to

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eliminate uncertainty about whether the foetus was healthy. There were differences in understandings around the purpose of the screen in relation to the choice to accept or decline the test. For example, some women who accepted the screen conceptualised it as a possible tool for preparing themselves for the birth of a Down Syndrome child. Despite the variation in personal attitudes towards screening, the subjects appeared to be similar in ethical views. Technical help was regarded by both those who agreed to pre-natal screening and those who did not, as significant in relation to controlling the pregnancy outcomes. There was agreement that intervening in the natural outcome of pregnancy was a concern, and both groups displayed fear regarding the progression of screening into a tool to select healthy children. The right to select the child with the highest chance of a good life was used by both cohorts. Overall, their findings supported a diversity of views grounded within the context of the individual mother, and that ethics, morals and personal attitude may differ within the same person relative to PCB screening.

Another study interested in decision making by pregnant women concerning prenatal screening (van den Berg et al, 2008), suggested more research is needed in the values and the social context of their decisions regarding prenatal screening. Markens, Browner and Press (1999) found that women who decline prenatal screening did not signify rejection of, or resistance to science and technology outright. Rather rejection was often grounded in medical concepts, such as the concept of risk. This signifies the overall perception of women and their health concerns needs to be contextualised beyond simple mapping of their PCB approach and technology practice.

Assisted Reproduction Technology such as In Vitro Fertilisation has also been researched. Friese, Becker and Nachtigall (2006) conducted an ethnographic interview study of seventy nine couples in the USA that had received donor oocytes in IVF procedures. They found women connected with cultural and social mediators in relation to the technology. "The narratives of these women speak to the profound social change that engulf them and provide a window into a social life transition that is occurring globally" (p. 1559).

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Root and Browner (2001) were interested in self reports from women in relation to ""multiple strategies deployed during pregnancy to fuse knowledge communicated to them from the technologies of prenatal care (optic, authoritive) with the knowledge communicated to them by profound changes attendant upon the arrivals." (p. 219). They found that pregnancy is characterised by a spectrum of compliance and resistance to biomedicine norms, negotiation of power based relations, and subsequence compliance for each woman.

Overall, the research supports women as agentic in their PCB technology practice. Béhagues(2002) for example found that women who preferred caesarean births in Brazil were as active actors in regards to their decisions around birth. This is in contrast to traditional framing of women as passive receptors of the gaze of medicine.

There has been research interested in technology as a whole in relation to PCB. For example, Williams and Umberson (1999) interviewed fifteen primarily white, middle class, married couples prior to and after the birth of their first child. They found firstly, that their findings supported the theory that women are medicalised through pregnancy; secondly, that fathers were able to be more involved in the birth process through the use of technological intervention; thirdly, that women used technology as a form of pain control with a subsequent lack of "control over, and a de-legitimization of knowledge about, their own bodies" (p.164); and fourthly, women enjoyed the involvement of the father in the process of birth due to use of technology. However some resistance was observed on the occasions when husbands had access to information about the woman's body that was less visible to her, when the information was displayed on a monitor. And finally, medicalisation of the woman was encouraged by the women themselves.

Research has also been interested in other key constructs surrounding PCB healthcare. Barker (1998) had an interest in the role of biomedical rhetoric in the rise of medical cultural authority through investigating pregnant women. It was found that medicine was interested in medicalising the pregnant women through, "reconceptualising pregnancy as medically problematic rather than experientially

and organically demanding" (p.1067). These findings illustrate a complicated terrain for women to mediate in regards to healthcare, and that furthermore, it is highly constructed with invested agents and power differentials. Mansfield (2008) unpacked the construction of 'natural' as a childbirth approach in regards to technology. She also challenged current social science practices in regards to traditionally viewing childbirth as nostalgic as well. These findings overall indicate a need to be critical of traditional ways of viewing PCB due to the hidden qualities attached to meanings around these constructs.

Overall, women in these studies had a diversity of perspectives in regards to specific forms of technology, which mediated their understanding and use of it. Generally speaking, social, ethical, cultural, moral and psychological norms were drawn on by the women within their discourses around technology. In particular, biomedicine and expert opinion were explicitly drawn on by the women. Information relating to tests was carefully judged in order to make considerate decisions around healthcare.

In terms of prior research that is similar to this thesis' premise and critical orientation, Jude Kornelsen (2005) explored the connection between cultural inclination towards technology, the nature of technology itself, and attitudes of birthing women towards obstetric technology. She drew on an analytic framework that included literature on the philosophy of technology, as well as the sociology of childbirth. She interviewed 50 Canadian women, with 25 women planning a home birth overseen by a midwife and the remaining 25 planning a hospital birth. In terms of results, she found a marked difference in the number of interventions used around labour and delivery. Women who gave birth at the hospital had 47 interventions (n = 25), home birth women that transferred to the hospital had 21(n =6) and the remaining home birth women (n =19) had no technological intervention. This gives reason to why there are differences in the number of interventions. Participants within her study spoke of the need to choose a location to give birth in order to resist possible technology and to give trust in the body. These findings showed the contested nature of the pregnant body in the context of healthcare and technology. It also indicated decisions and understandings around

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technology are socially mediated due to the role of context and use of technology. She recommended that further research focuses on the role of relationships and context around the use of technology.

2.6.2 Limitations of prior research

Although there is prior research with a critical interest in the processes and subsequent consequences to pregnant women and PCB technology, with special reference to Jude Kornelson's work, it is by no means exhaustive. In line with past research, the ongoing social and technological developments have placed an imperative to gain new understanding about the impact of these movements in the current context. Furthermore the link between macro level social change currently at work within technology and biomedicine and mediation in micro level practices, such as resistance to medicalisation by women, has been identified as an area of research for those interested in women and technology (Gabe & Calnan, 1989). Although Kornelson (2005) took a critical basis within her study, it did not have the scope for deep reflection on the context for either the research matter or the research itself. I would like to build on her efforts in order to develop a study that is similar in research area but with further critical engagement. There is a social need to engage with critically orientated research due to the shifts in power and implications for women within healthcare. If hegemonic constructs are not unpacked, power relations will remain unquestioned with subsequent consequences for PCB and women. Furthermore, their perspectives must be explored as part of encouraging social justice and the value of women perspectives and knowledge within research and the greater society. Also there is a need to generate research interested in the current New Zealand social and cultural context. This will add to the body of local information as relevant for New Zealand healthcare and research.

In summary, a description of the current status of the research area and the rationale for the study in relation to building on prior research has been outlined.

2.7 Research question

Consequently, I have arrived at the following research question due to a focused interest on how women are making sense of technology relative to their pregnancy in light of contemporary social and technological change.

> What is the meaning of biomedical technology for pregnant women relative to pregnancy and childbirth healthcare within the New Zealand context?

The raison d'être and significance behind the research problem and question will now be investigated in relation to social and research needs.

The focus within the thesis will be on the discourses that give women meaning of the technology. The thesis is orientated within the area of critical health psychology. Accordingly, through qualitative enquiry I can engage critically with the discursive relationship between the subjectivities of women in areas such as "class, race, gender, language, technology, culture, the political economy, and institutional and professional structures" (Brown, 1993, p.34) and technology. Therefore, by identifying and contextualizing these discourses and the women's discursive practices around them, I hope to deconstruct social and research orthodoxy around pregnancy practices, and to give acknowledgement to the processes and consequences of prenatal practices such as normalisation of new biotechnologies.

Sawicki (1991), as cited by Root and Browner (2001), further expands on the significance of re-situating the,

...evolving relationships among physicians, biomedical discourse, lay

practices and pregnant women; between social norms of 'good medicine' and 'good motherhood'; and among the different knowledges that are brought to bear upon, and which arise by virtue of, women's pregnant bodies. In so doing, one can thus furnish more illustrative "accounts of how certain institutional and cultural practices have produced individuals (p.220).

By positioning the social and psychological context as an integral feature of the research I hope to give credence to these factors. This theoretical stake is my effort to engage with the social nature of health that has been maligned in orthodox health psychology and more widely speaking, medical science (Lyons & Chamberlain, 2006).

I will examine contemporary discourses that shape understanding. This temporal and social space is an important distinction from past research. Essentially, there is a need for research to acknowledge the in-flux nature of social life and accordingly associated discursive practices. Therefore as pregnancy technology and social norms around technology enters a new era, it is of vital importance for research interested in this area to replicate itself.

Generally speaking, the insights and experiences of pregnant women are of value in a number of fields. Psychology of women, medical sociology (Waldby, 2006), medical anthropology (Kaufman & Morgan, 2005), feminist psychology (Layne, 1997), and critical psychology (Nicolson, 1998) all have active interest within this research area. Therefore I hope this study will be a useful addition to the body of critical knowledge across a number of disciplines and applied fields. As an aside, although I have not taken an explicit feminist viewpoint within this study, the act of celebrating subjective knowledge of females and sharing it amongst other people, is essentially a feminist act.

Due to the current emphasis on technology as the future for biomedicine and the increasing collective of public knowledge, there is a need to investigate the impact

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of technology for the women based on several reasons. Firstly, it is important to investigate those who are subject to the technologies to further understand if technology practices are beneficial to them. Essentially, even though the technology is available, does this translate unfettered to common practice? Secondly, currently there is some resistance to the use of technology based on ethical, social and moral grounds in the event technology is interfering with natural processes and of no direct benefit for society (Calnan, Montaner & Horne, 2005). Therefore, this is a troubled context which possibly amplifies psychological and social consequences for pregnant women. It would therefore be of benefit for the women if we gain understanding about how they navigate the often controversial nature of technology. This research has implications for both better understanding and therefore acknowledgement of the perspective from the women, and also the knowledge will be of practical and philosophical use to research and clinical practice.

Ethically and theoretically speaking, there is benefit in repositioning women as active partners in the research process. I also believe PCB health should not be viewed inherently as a pathological event and accordingly I acknowledge the need to approach PCB and women's health from a salutogentic perspective. I therefore hope space in this study can be claimed by the women for their benefit. Historically, the lens of andocentric science drawn on by psychologists has had the effect of distorting women subjects. I wish to try a different route through the use of qualitative philosophies and methodologies within a study that focuses explicitly on women as subjects. This is one way to legitimize the construction of knowledge from female subjects in opposition to dominant male driven scientific ideologies. Essentially I want to place the subject back into research interested in women's health and correspondingly, re-identify women within their experience. As Mol and Law (2004, p.43) commented, we are both a "public body object and ... a private subject body." Consequently I will be able to offer new subverted possibilities and outcomes for the research area overall.

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Chapter 3   Research Design

"The Latin roots of the word 'text' are found in the activity of weaving, and the tissue of material that clothes us is now the model for the tissue of meaning that holds the world together" (Parker, 1996, p.92)

This chapter outlines the philosophical basis for the research and the tools involved in the analysis of the data. Although I am aware of the problems with increased research bias due to prior literature reviews and research conceptualisation, there is a need to formulate frameworks from which the research resides in order to proceed appropriately with the study.

3.1 Research Aims

To begin, I take up the challenge of Adele Clarke to critically reflect on both the field and intent of theoretical interest. In reflection of the progression of feminist standpoint theory and research, she builds on the seminal question for social science researchers, "whose interest is this theory in?'" that was originally asked by Scully and Bart (1973, p.213). to then ask, "Who produces what knowledges? For whom? Under what conditions? Who control access to these knowledges and how are they distributed? Where does x knowledge stand in the stratified hierarchies of knowledges? How can one engage and challenge such knowledges?" (Clarke, 2003, p.34). This study has an interest in the basis of

knowledge construction within socially symbiotic relations, and therefore these theoretical questions are applicable for illuminating knowledge and power practices in the study. However in the context of the research formulation they are also of significance in terms of informing the theoretical construction in a socially engaged fashion. For these reasons, I reflected on Clarke's ideas throughout the research conceptualisation, which I now discuss.

Broadly speaking, I have employed a purely qualitative approach to the study from the field of critical health psychology. Health psychology is "concerned with understanding human behaviour in the context of health, illness, and health care. It is the study of psychological factors which determine how people stay healthy, why they become ill, and how they respond to illness and health care" (Weinman & Petrie, 2000, p.1225). Accordingly, engaging in critical research involves taking on this underlying principle but at the same time acknowledging there are some criticisms of mainstream health psychology methods and theories due to ongoing concerns with relationships and power situated within the discipline (Lyons & Chamberlain, 2006). Qualitative research was selected as the overall research paradigm for the study. This paradigm focuses on context, states that the world is emergent rather than prefigured, and that it is fundamentally interpretative (Rossman & Rallis, 2003). In terms of specific philosophical positions, social constructionism was selected as the epistemology and Foucauldian Discourse Analysis (FDA) was selected as the methodology. As part of these philosophical underpinnings, I did not present ontology as a separate philosophical level of approach from the epistemology. Crotty (1998) acknowledges there are conceptual problems with unfolding the two positions apart from one another, and consequently this distinction was not attempted here.

3.2 Epistemology of choice: Social Constructionism

In order to provide a philosophical background for the research, the following is outlined. Firstly, a brief description of philosophical positions will be made concerning the epistemology; secondly, an outline around the reasons for

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choosing social constructionism as a consequence of the needs of the research and my positioning will be given; thirdly, a note of concern in regards to social constructionism will be given in relation to the research and finally I will discuss possible theoretical progression as an outcome of the research. Implications for the study in relation to these philosophical choices will be described throughout these passages.

To begin with, epistemology concerns itself with the status of knowledge (Taylor, 2001). It provides an overall philosophical position of how we know our reality (Chamberlain, Stephens & Lyons, 1997). Gergen (2003, p.15) outlines social constructionism as an epistemology that "...is principally concerned with explicating the processes by which people come to describe, explain, or otherwise account for the world (including themselves) in which they live. It attempts to articulate common forms of understanding as they now exist...." Lyons and Chamberlain have a similar definition, but with more focus on social factors. They conceptualise social constructionism as,

> ...the notion that the world we experience, and our understandings
> of reality and people, comes from our social life. Thus, our reality
> is a product of our social life and does not exist in a
> straightforward, taken-for-granted manner (2006, p.25).

There are many debates surrounding different types of perspective. I have taken a critical realist perspective in order to gain access to the "social, material and biological *processes* that shape our subjectivities rather than confine itself to an analysis of nothing more than the discursively available outcomes of such processes" (Nightingale & Cromby, 2002, p.710).

Because I am interested in the construction of meaning and the influences at work in these constructions, I am faced with traditional western ideals around concepts such as the truth, objectivity and knowledge, which have an influence on the constructions that the women in the study make. In the context of healthcare, institutions such as biomedicine and science are key influences (Locke, 1988,

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Lupton, 2003). The women also reside in a social world that is layered with dominant social, cultural, political and psychological discourses that have an influence on her health understandings and practices. Institutional positions and understandings within the constructions become "socially standardized" (Garfinkel, 2003, p.11). Claims from positivist science state subjective knowledge has a less authoritive stance on knowledge (Wing, 2008). This therefore reinforces dominant ways of being and seeing for healthcare users, and for orthodox health research with an uncritical eye. Consequently, by drawing in the social constructionist perspective, I will be able to give voice to these socially 'silenced' constructions. Expanding on this intent, I wanted to illuminate the social and psychological processes and context involved for the women around the meaning of technology from their subjective experience and practice. This line of inquiry therefore necessitated an epistemology that caters to these contextual demands. Social constructionism was selected because it has a sceptical view of seeing the world in comparison to orthodox positivist approaches in psychology. I wanted to engage with the subjectivity of the women. Due to this research need, I stand in contrast to some scientific philosophies. This is in agreement with Kuhn's commentary that, "Scientists do not see something *as* something else; instead they simply see it" (2003, p.37). It places an imperative on being aware of the moral nature of research that can conceal personal and political opinion (Parker, 1996). This principle encouraged reflexivity in order to reveal personal and research biases within my practice as the researcher. Furthermore social constructionism was an apt choice because it gives weight to addressing the multiple realities and multi-vocalities that influence PCB healthcare practices.

In addition, social constructionism was an appropriate knowledge framework for the research because it acknowledges that you cannot uncover a truth of reality, but only offer a partial interpretation of it (Taylor, 2001). This allowed a better standpoint to engage with the stories offered by the women as their own interpretations of their worlds, as opposed to an etic viewpoint. I did not wish to reinforce power differences due to my position as the 'expert' researcher in comparison to the position of the participants as a lay people. These deconstructions are important considerations.

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A cautionary criticism regards the need to acknowledge the body as a subjective experience by social constructionism in psychology research (Cromby, 2004). Because this study was interested in pregnant women and their health, I regarded the body and subjective practices as a key part of the discursive context from which the women mediated their discourses. I adopted a social constructionist approach that was guided by a critical realist perspective in order to acknowledge the subjective embodiment of pregnancy. This approach has been adopted usefully in the past to illuminate biomedical practices of power, subordination of subjective knowledge of patients and the need to reclaim the body and knowledge within healthcare.

Frank commented particularly on the dichotomous relationship between the subjective and the objective body when he was under the care of medicine during a bout of illness. He says, 'These two stories, the story of medicine taking the body as it's territory and the story of learning to wonder at the body itself, can only be told together, because illness is both stories at once (1991, p.220). In relation to this study, embodiment can be conceptualised within the fleshy bellies and morning sickness of pregnant women. I also recognised that the material relationship and consequences for discursive practices within health is deeply connected within a psycho-neuro-immunological system. Booth and Ashbridge (1993) offer further insight into this conceptualisation of health, self determination and psychology. Where my research differs is that I acknowledged how we come to know this physical reality is socially constituted *and* that there are materialistic consequences for the women. Therefore, it was important to acknowledge the role of embodied subjective experience at work within the stories of this study.

Subsequently, I regarded the adoption of critical realism as a small way of progressing research under social constructionism. Unfortunately there was not the scope in this research to go further into detail concerning subjectivity, theoretical discourse and critical psychology debates. However Hook, (2001), Parker, (2002), van Dijk, (1998) and Wetherell (1998) provide comprehensive

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overviews in relation to the theoretical debates in the area of social constructionism.

Another reason why social constructionism was appropriate is as follows. This study conceptualises health from out of a bio-psycho-social conceptual framework that rejects the Cartesian view that the mind and the body are separate entities. Accordingly, a person's health can be conceptualised as a formulation between the psychology, social and biomedical systems. In the past orthodox health psychology has been criticised because it neglected the role of the social factors and processes, and furthermore the social and psychological systems were not integrated adequately as part of the formulation (Spicer & Chamberlain, 1996). Social constructionism was therefore apt because it firstly, answers these theoretical problems concerning the need to address social factors and secondly, it gives recognition to the context of the research problem concerning the socio-political world of the women and health, which ethically must be addressed. This is because it has an explicit emphasis on the social context, and furthermore it can accommodate the relationship between social influences and psychology in the research.

3.3 Methodology of choice: Philosophical and theoretical perspectives of Discourse Analysis

Discourse analysis was chosen as the methodology for the project. What follows is a brief introduction and overview of this methodology, a discussion of the philosophical and theoretical perspectives, my reasons for selecting a particular form of discourse analysis. And to conclude, the limitations of the selected discourse analysis is briefly mentioned.

Historically, discourse analysis is part of the contemporary "turn to language" that social psychology employed from the 1970's in reaction to the cognitive paradigm

and the need to readdress the role of the social context in psychology (Parker, 2005, p.88). Within psychology it is something of a "growth industry in both research and critical psychology" (Hook, 2001, p.571). This methodology "addresses the ways in which language is so structured as to produce sets of meanings, discourses, that operate independently of the intentions of the speakers, or writer" (Parker, 1996, p.92). As part of the theoretical reorientation in psychology, it is focused on generating '"a better understanding of social life and social interaction" within social transcripts (Potter & Wetherell, 1987, p.7).

Discourse as a key concept needs to be defined due to its "wide ranging and slippery" nature (Taylor, 2001. p.6). Hall (1992, p.291) expands on Foucault's definition as "a group of statements which provide a language for talking about – a way of representing the knowledge about – a particular topic at a particular historical moment … Discourse is about the production of knowledge – a particular historical moment."

Psychology research theorists offer information about the theoretical underpinnings of discourse analysis. Langdridge (2004) states firstly that discourse is action orientated, that is, that language gives function to the objects described over and above mere description. In essence, language has functional aspects and it 'does' things. And secondly, discourse constitutes positions and consequently, subjectivity. This subjectivity gives rise to power relations between people and has implications for their subjectivity and experience. Parker (2005), on page 89, builds on these principles in an evaluation of key theoretical ideas in discourse analysis.

1. Discourse analysis focuses on the multi-voiced-ness of language, instead of searching for more concrete underlying psychological processes themes.

2. Discourse analysis focuses on semiotics (the way in which we put language together, and how we are put together in a certain shape by the language as already organised into discourse).

3. Language gives room for resistance within people's relations, or

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alternatively, it can reinforce cultural forms as a 'social bond' drawn on by people within society.

4. Discourses create ideologies because they are in essence a form of social organisation.

These philosophical principles helped to guide the research in terms of theoretical orientation based in discourse analysis methodology.

3.4   *Foucauldian Discourse Analysis*

There are a considerable number of different types of discourse analysis methodologies currently available in qualitative research that differ in their methods, approaches and disciplines. For this study, Carla Willig's (2008) Foucauldian Discourse Analysis (FDA) was selected. Although it is customary to not follow any set rules or guidelines in regards to the application of FDA in order to avoid formulisation within research, there are broad tenants that are necessary to provide guidance. In this vein, a brief overview of FDA adapted by Willig (2001) is outlined. This outline guided the analysis process. Essentially, FDA requires,

1. A focus on the discourse resources and therefore positioning for the women in the context of this study.
2. A concern with the role of power in the wider social context.
3. Is interested in dominant discourses that privilege existing relations.
4. An interest in the role of history and developing subjectivities.
5. Pays attention to the relationship between discourses and institutions.
6. Is concerned with the relationship between subjectivity and practice and the material context from which they operate.

Based on these principals the appropriateness of FDA for this study was clearly evident. This is because the methodology has an explicit interest in investigating

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power relationships within people's accounts. This is highly relevant for my study. The acknowledgment of time and history as contextual for knowledge production also aligns this theoretical approach with this study, due to the need to recognise the implications of the longstanding relationship that biomedical healthcare has with women relative to contemporary healthcare behaviour.

On a wider basis, FDA was a suitable methodology to work in tandem with social constructionism. This was because both approaches have an appreciation for the forms and processes involved within construction of meaning grounded within the wider socio-historical context.

Accordingly, it is important to place the choice of philosophical basis for this study within the greater context of psychological research. Qualitative research approaches in particular are gaining popularity within psychological research (Parker, 2005). Harre' (2006, p.226) notes,

> .... the realization of instabilities and historical changes in
> salient features of human psychology runs strongly counter to
> a long-standing tradition favouring nomothetic methods and
> universalist claims, not only for all of humanity as it now is,
> but for the whole history of *Homo sapiens.*

This commentary on the radical nature of qualitative research has the potential to revolutionise psychology, due to the extent of the proposed theoretical change. Harre' also underlines the need to locate the choice of theoretical philosophy for your study within the greater context of psychological research. Qualitative research approaches in particular are gaining popularity within psychological research (Parker, 2002). I seek to add to this direction not only due to the appropriateness of it in relation to my research question, but because I also want to add to the body of critical psychology knowledge. This can be understood as an extension of my scepticism of orthodox psychological research and associated positivist philosophical principles. However I also acknowledge the need to be tempered in the choices surrounding research design due to the aversive effect of methodolatry (Lyons & Chamberlain, 2006), causing a bias towards one method

over another one regardless of the research question with the resultant problem of an ill-conceived design

Due to the critical psychology view that knowledge is completely situated, my position as a 'key actor' (Parker, 2002, p.2) necessitated the need to be open with my positioning and experiences during the research process. Reflexive commentary will therefore be fettered throughout the thesis in order to inform the reader of the orientation of the research. I acknowledge that although I am a common occurrence in New Zealand psychology research, that is, a young middle class Pakeha female psychology student, within the context of research and politics, and in spite of my privileged position within society, I wish to continue the desire to question the 'othering' of women and women's health, overall.

Chapter 4   Research Process

"Everything needed to be rethought and discussed,
and we were all trying to do it all at once. They were
the yeastiest of times" (Clarke, 2003, p.34)

In this chapter I detail and critically evaluate the research process undertaken in the present study. This will be done in several sections. These include a discussion around the participants and recruitment processes, the interviews, the transcription, the ethical considerations, and finally, the practicalities of the analysis.

4.1   Participant selection

Ten pregnant women constituted the sample for the study. Pregnant women were selected as relevant subjects due to their subjective experience with pregnancy related technology. Essentially I had simple and specific selection criteria for the participants. This criteria centred on firstly, being a pregnant female; secondly, being over the age of eighteen years of age in order for the research to specialise on women of adult age; and thirdly to be able to comprehend and engage in conversational English, primarily for ease in interviewing.. Furthermore, by agreeing to be interviewed, I hoped for the women to be reflexive and free to

discuss openly within the interviews. I was deliberately broad when defining criteria. This was done because, when reviewing research specific to pregnant women and technology, it was evident heterosexual, middle class, and middle aged women characterised research participants. Consequently, I wanted to diversify knowledge by gaining access to a diverse range of people with different experiences.

The following passages provide a brief description of each participant with information related to her age, family context, ideas regarding PCB and experience with technology. The names of all participants, their families and any potentially identifying information, have been changed to protect their privacy.

Sophie is a university student in her early twenties. She lives with her husband, Tim and her 18 month old daughter. She wishes for a hospital birth with her current pregnancy, and has experienced a small amount of technology use. She approaches pregnancy healthcare with a pragmatism, which means she will use what ever is necessary for a healthy birth. She is under the care of a midwife.

Aleisha is in her early thirties and is a business woman. She lives with her husband Nate. This is her first pregnancy. She has experienced IVF and has been under the care of medical specialists but is currently under midwife care. She has a preference for natural approaches and specialists, but is ultimately pragmatic about her choice of pregnancy healthcare.

Nathalie is a university student who lives with her partner Jaime and his child Peta. She wishes for natural birth, has not had a lot of technology intervention and has a strong desire for a natural approach to pregnancy healthcare. She is critical of medicine and technology intervention, but is pragmatic about this. She is under the care of a midwife.

Kelly is in her middle twenties and is married to Kurt. This is her first pregnancy. She is under the care of a midwife. She has negotiated her experiences with

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technology including routine procedures such as scans on moral and religious grounds.

Sally is in her early forties. She is married to Sam. She has three children from a former marriage. These include Emile (thirteen years old), Dominic (eleven years old) and Marie (nine years old). She has an eighteen month old daughter named Michelle and is expecting her second child from her current marriage. She has had a lot of experience with technology and medical specialists due to medical complications in her first pregnancy. She is has a largely medical approach to pregnancy and birth healthcare. She is under the care of both medical specialists and midwives.

Irene is a school teacher and is in her late twenties. She is married to Tom and has an eighteen month old son named Billy. She is currently pregnant with her second child, Ella. She has had a lot of experience with technology including the use of IVF for her first child. She has a largely medical approach to pregnancy and birth healthcare. She has experienced miscarriage. She is under the care of a midwife.

Iris is a stay-at-home mum. She is married to Matt. Her children include Alice (six years old), Britney (four years old), and Theo (two years old). She is pregnant with her fourth child. She has experienced miscarriage and a range of medical interventions relating to pregnancy and birth. She has a pragmatic approach to pregnancy and birth healthcare, and is critical of medicine and technology. She is under the care of a midwife.

Beth is in her mid thirties and lives with her partner Paul who is currently working oversees. She is a school teacher and is pregnant with her first child. She takes a medical approach to pregnancy and birth healthcare. She is under the care of a midwife.

Sara is in her early thirties and is a healthcare professional. She lives with her husband Miles. She is under the care of a midwife and obstetrician. She

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contemplates both natural and medical approaches to pregnancy and birth healthcare. This is her first pregnancy and she has experienced miscarriage. She has experienced a range of technology and specialist care from past pregnancies.

Alyssa is in her early thirties and is married to James. She is a healthcare professional. She has a two year old son named Riley, is pregnant with her second child and has experienced miscarriage. Currently she is under the care of a midwife. She has experienced a range of technology and specialist care from past pregnancies. She has a preference for natural approaches but is pragmatic about this position.

4.2   Recruitment

Pregnant women were recruited and interviewed between late December 2008 and June 2009. I interviewed two women in Auckland and eight women in Palmerston North and the surrounding area.

Women were recruited into the study through three sources. These sources included snowballing whereby potential participants were informed about the study by a third party. I also placed advertisements in local newspapers and poster displays were displayed in local pregnancy centres and midwife practices. People contacted me for further information regarding the study, and then if keen to proceed, we would organise an interview time and location. From the first contact I made sure the women understood their rights and was open and forthcoming with information about the study. These values were adhered to because of the importance I placed on empowering research participants through the valuing of their position in the research, being open about the research process, and showing active engagement with their concerns. At this first contact point the women gave me enough personal details in order to correspond and make arrangements for an interview. A package containing an information sheet regarding the study and participant's rights and responsibilities, criteria for selection in the study, treatment of the interview material, what would happen to the interview material

after the study was completed and contact information for the Ethics Board (Appendix A), and a consent sheet (Appendix B) was then sent to the participant through email or post.

4.3   Interviews

In the following paragraphs, the interview method is discussed relative to the theoretical underpinnings and appropriateness for the study.

Interviewing participants is a "central aspect of qualitative research methodology" (Bevan & Bevan, 1999, p.15) and has been utilised comprehensively within qualitative research (Marshall & Rossman, 2006). It provides "an opportunity to question the separation between individuals and contexts, to ground accounts of experience in social relations" (Parker, 2005, p.52). According to Burman (1996), there are four reasons for researchers to choose interviews as a method of collecting material. These include a concern with subjective meanings rather than with eliciting responses within a standardised format, for comparison across groups; an interest in exploring issues that may be too complex to investigate through quantitative means; a consideration of reflexivity in the research process and finally; because of "the process of making visible your own work in the construction of your material, is the question of power relations in research," (p.51). These four points provide a basis for why interviews were chosen as a method for this study. In particular, due to the critical social constructionist epistemology utilised within the study, interviews were an appropriate method because they adequately allowed access to the talk provided by the women from their viewpoint, around construction of knowledge and power relationships.

Parker (2005) discusses further the need to reposition the role of the participant as a co-researcher. This is due to the symbiotic relationship between the researcher, the participant and the resultant construction of material from the interview. He offers two main considerations for radicalising the interview.

> First, we can turn interviewing from being merely a technique of data
> collection into a methodology, and craft that methodology so that it

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deliberately does some analysis in the very process of collecting the material. Second, we can focus on   the interview process itself, so that what the interviewer says is treated with as much care as the interviewee says. (p.54)

This new orientation offered by Parker was very applicable for this study because it catered to my direction about how we view and conduct interviews from within a critical framework. It acknowledged how knowledge and subjectivities is mediated from within the interviews, and what can be done to empower women as research subjects.

The study drew on the "new paradigm" approach in terms of informing interview practice. (Reason & Rowan, 1981, as cited in Burman, 1996, p52). What characterises this approach is firstly, the valuing of what people have to say on a meaningful and informative level; secondly, that research is deemed collaborative with open engagement on behalf of the interviewee and there is an accountable responsibility on behalf of the researcher; and thirdly, that the traditional model of 'researcher-researched' is disrupted due to the researcher placing emphasis on humanising and not exploiting participants (Burman, 1996). This approach was appropriate because it considered the ethical, social and theoretical aspects, which were in line with the overall methodology and epistemology of this study.

Specifically, a semi-structured interview style was selected for this study. While semi-structured interviews explicitly have an interview schedule, they also allow for exploration of content with the participant as well. This version of interviewing was appropriate because it fosters exploration and investigation of responses by participants to initial scheduled questions. This has the benefit of detailing individual experiences, but at the same time remaining close to exploration around the schedule topics. Semi – structured interviews also have an advantage in providing content guidelines and therefore a basis for time management. In the event the participants offer significant new topics in relation to the interview, there is the ability to capitalise on these directions. This is an

important consideration when working with people in a given time period. Marshall and Rossman (2006) acknowledge that it is a fundamental premise of qualitative research to place emphasis on the unfolding of the matter of interest by the participant over the framing and restructuring of the researcher. The etic (researcher) perspective on the subject matter is less significant than the emic (participant) perspective. In this study this had the added benefit of allowing me to focus on the interview with the participant and to engage in a conversational styled interview. The open format of a semi–structured interview also allowed space for the women to engage in dialogue from a creative platform. This was an important consideration for this research due to topics being related to complex constructs that may be controversial, such as family health choices, and furthermore the women may have need time and space in the event that they had not previously vocalised about the topics in depth.

Overall, these decisions and choices were made not only after consideration of implications for the research and the women as participants, but also were made within the context of ongoing subversion of women and health discourse in research. I wanted to politicise and empower women in my choices around research methodologies and methods as part of a commitment to social justice.

There were practical aspects to using semi-structured interviews. In the following sections I detail what was involved with the development of the interview as part of the study

Semi-structured interviews required an interview topic schedule for use during the interview. This ensured the interviews centred on systematically obtaining comprehensive information relevant for the research question, and as a way of shaping interview material for ease of comparison across participants. I have placed this schedule in the appendix as Appendix C.

The purpose of the interviews was to empirically collect comprehensive

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information from pregnant women in regard to the meaning of biomedical technology as applied to PCB healthcare, crucially from their perspective. In all cases the women presented multiple meanings and consequently, I refer to meaning in the plural sense. The interview topics explored areas that related to what the meanings were; how women developed these meanings; what were the influences; and what were the consequences of these positions and practices. I was particularly interested in meaning as it related to the idea of healthcare, family and family health and healthcare, health and disease, the woman herself, pregnancy, birth and future healthcare, past ideas around health and healthcare, the relationship with biomedicine or other health approaches such as alternative therapies, and finally, technology as a new direction within healthcare.

Prior the commencement of the interviews I informally conducted a pilot interview with a suitable acquaintance. This allowed me to make sure the interview format was workable and to decrease the anxiety I was experiencing as a novice interviewer. Consequently, although I did not need to change the format of the interviews, I felt more psychologically prepared for the interviews.

4.3.1 Content and process

I interviewed the women at a variety of places deemed suitable by both myself and the woman. These places included the home, interview rooms in the School of Psychology and for one woman, at her place of employment. Potentially, the location of the interview had implications (Taylor, 2001). For example universities are traditionally endorsed with authority and knowledge in society, which may influence the participants and their answers. However this was a worthwhile compromise for this study because the women often were heavily pregnant and/or with young children and it was less complicated for me to travel to the participant for the interview. Furthermore people feel more comfortable within their own home which would possibly lead to a better rapport and richer material from the interview. I aimed to provide a space with minimal noise and

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interruption when interviewing at the School of Psychology. However in the event of holding interviews in the homes, then this consideration was not so easily controlled. I brought refreshments and placed an emphasis on making sure the women were as comfortable as possible without invading their personal space and that they were aware of the ethical considerations around pressuring participants to go beyond what they felt comfortable with.

The process of the interview was as follows. After arriving at the place of the interview introductions between myself and the woman were made. Then there were some general administration duties that served important ethical considerations in relation to this study. I made sure the woman understood the interview procedure, the purpose of the interview, and her rights and responsibilities because I wanted the woman to be best informed before consenting to the interview. I collected a signed consent by the woman at this point (Appendix B) and I made sure that she had a copy of the information sheet (Appendix A) for future reference after the interview. All the women were offered the opportunity to request a transcript of their own interview and a summary of the research, that would be sent out after the study was finished. These were offered because I believe it is good ethical practice to disseminate research findings amongst research participants, and furthermore, to foster wider audiences outside of academia. Consequently, it was important to make sure the contact details were correct. I then made a point of asking if there were any further questions before proceeding to the interview. Before the commencement of the interview I also checked again with each woman to ensure she was feeling comfortable and whether she wanted to use the referrals .In addition, I offered to be available for any subsequent questions after the interview.

The interviews were audio taped and they lasted in length between forty five and one hundred and twenty minutes, averaging around sixty minutes. I drew on my experience as a phone counsellor to apply useful interviewing techniques to facilitate better interviews and used strategies such as active listening with minimal interruptions. This is acknowledged as good interviewing practice (Berg, 2007). At the completion of the interview I thanked them for their time and their

interest in the study, with the intent to leave on a positive note.

4.4   Transcription

The recorded interviews were then transcribed absolutely verbatim by me to provide a basis for the analysis of the talk. It is important to recognise that transcription is a part of the analytic process rather than a separate process. Transcription involves focusing and selecting material according to research aims and theory (Taylor, 2001). Accordingly, the level of detail captured in the transcription should be appropriate for a project interested in discourse with the use of discourse analysis methodology. Broadly speaking, it is important to include both the interviewer and the response of the participant. This allows the contextual influence of the interviewer and the interview in shaping the participant's responses to be acknowledged. In order to provide a system that supported this principle I developed my own system of notation rather than draw on other notation models. This was due to my desire to make transcription as uncomplicated as possible. Furthermore, because this study is drawing on discourse analysis methodology and has an interest in discourse, finer sub-discourse detail such as intonation was not acknowledged when transcribing, because this is beyond the scope of this study. I was interested in documenting not only the interview talk between the participant and the interviewer, but also any nonverbal responses that may have added levels of comprehension during the analysis. These included laughter, grunts and minimal encouraging talk used by the researcher such as 'aha', coughing, sneezing, or gestures that were significant in the context of the response. These behavioural gestures included pointing to their stomach to show differences in pregnancy size or hand gestures to emphasis a conversation point. I noted if people spoke over one another and pauses, acknowledging those that lasted over three seconds.

In summary, my aim with transcription was to provide a readable, clear and accurate description of the interviews in order to facilitate the analysis.

4.5 Ethical concerns

Ensuring care of the participants was a core concern within this study. Massey University Ethics Committee oversaw that the project was compliant with ethical treatment of the participants. Accordingly, I had to comply with a range of ethical procedures which included informed consent, confidentiality and anonymity through the use of pseudonyms and lack of identifying features within public work, right to withdraw without prejudice, and the right to stop the interview at any time, for any reason. Due to the potential for the topics to be upsetting, I wanted the women to feel they had total control over disclosure as well. I acknowledge the potential for a power difference in relationships during the interview and was diligently aware of this and acted accordingly. At this point, it is not anticipated that the women will be subject to any harm. In the event that this does happen I have provided the women with useful referrals such as the Massey University Ethics Committee and my supervisor Professor Kerry Chamberlain. I hope the experience was a positive experience, allowing the women to discuss matters that had significant meaning to them, in a safe manner.

4.6 The analytic procedure

I will now give an overview in relation to the analysis of the transcriptions. In chapter three the theoretical basis of Foucauldian Discourse Analysis was given, and subsequently, why it was an appropriate methodological framework for the study. In this section a discussion around the practical aspects of using this procedure will be given. I drew on Willig's (2008) model of Foucauldian Discourse Analysis in order to provide a guide to analysing the interview material. Briefly, this entailed firstly, finding out ways in which the discursive objects of the women were constructed; secondly, identifying the differences between the constructions of the discursive objects to identify discourses; thirdly, examining the context from within which the different constructions of the object were manifested; fourthly, looking into the subject positions they offered; fifthly, exploring the relationship between the discourses and practice in terms of what

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opportunities for action were made available; and finally sixthly, exploring the relationship between the discourses and subjectivity.

In terms of procedure, after interviewing and typing up these interviews, I printed the transcripts out within Microsoft Word files. I then cut and pasted chunks of information. These chunks were arbitrarily related to specific topics that emerged over both time and reorganisation with the addition of new pieces of information and new ideas. Eventually subtopics developed underneath the topics. With the separation I was able to evaluate patterns of talk both across and within the women. In terms of informing ongoing conceptualisations, I was simultaneously reading relevant literature in order to create a picture of what was happening in relation to the data and my research aims, and reflecting. Although this is, in theory, a step by step procedure, I often circled and backtracked in my practice as I moved through the steps. This circular movement in analysing was necessary, due to the complicated nature of social life that essentially is what social research is contending with.

Consequently, variability and patterns in the talk were revealed over my shuffling and reshuffling of the material, and allowed access to the meaning of technology for the women. In summary, these meanings provided the basis for eventual post analysis discussion. In the next two chapters I will discuss the discourses and impact of these discourses for the women, in relation to the meaning of technology.

Chapter 5   Discourses

"Research is to see what everybody has seen and to think what nobody has thought." (Szent-Gyorgyi , 1937, as cited by Good, 1962)

"Research is formalized curiosity. It is poking and prying with a purpose."
(Neale Hurston)

The analysis of the talk identified six prevalent discourses that women drew on in order to make sense of biomedical technology. These discourses included risk, biomedicine, morality, the good mother, consumerism and naturalism. The intent of this chapter is to outline these discourses in terms of how they came into being for the women and what influenced the construction of these discourses. Comparisons of the discursive practices both within and between the women will be made in order to investigate the creation of the discourses relative to the meaning of technology. In chapter six I will analyse the consequence of these discursive practices for the women in relation to their PCB healthcare.

In terms of conceptualising discussion around the identified discourse, I selected sentiments that represented what the majority of the women were engaging with when making sense of technology. This was done to provide a level of relative generalization across the women.

5.1 Risk discourse

PCB is constructed as a medically risky experience for women and their unborn child within contemporary western society (Grimes, 1994). This construction is facilitated by the popularity of biomedical approaches within PCB care which frames PCB as an unknown process for lay people and consequently, in need of expert knowledge and supervision (Lupton, 2003). (Tulloch & Lupton, 2003) comment on Beck's theory that the general context of modern life has been acknowledged as inherently risky within the transition from "industrial society towards 'risk society' as part of the processes of reflexive modernization" (p. 2). This context will further construct pregnancy and related healthcare practices as risky due to their conceptualisation within a problematic society.

The majority of the women in the study drew on discourse relating to concepts around risk within their construction of technology relative to the problems of pregnancy and birth. The risk discourse served different functions due to the various positions, and therefore mediations, of other discourses surrounding technology. Essentially, it served to justify their understandings and subsequent use of, or resistance to, technology.

Risk discourse could be identified in the talk by reference to scientific ideas around estimated risks for disease and side effects, and statistical inferences. In the following, Sally draws on risk in relation to her consideration of the nucal tubal scan.

> *Melanie:* So when do you do the nucal tubal scan?
> *Sally:* ... And they do it at about twelve to thirteen weeks, and it checks for the thickness on the baby's neck for Down Syndrome and um, and although chromosomal abnormalities, um and it is the first step in a process, you know, eliminating and the risk, or decreasing the risk of having a baby like that, cause I think, ah with this baby um, my risks at the beginning um, were one in sixty-eight of having something wrong with the

baby, only purely due to age, not any other factors that came into it from previous pregnancies or anything like that, and then after the NT test it went to one in two hundred and seventy, and then they give you blood tests, a MSS test or something it stands for, um and after that I think the risks went to 1 in seven hundred, so you know that's a huge difference from one in sixty-eight.

Melanie: So it's like the revelation, ah the accuracy increases as you go?

Sally: Yeah, the more you know, the more tests, and the greater the use of technology, um I suppose that are in those tests, they can test that.

Sally, as an older mother in her early forties, had a higher risk of age related medical problems with her pregnancy. The use of risk discourse was evident with Sally as she framed the technology as a tool to help decrease the amount of unknown danger present with being an older mother. She used numerical odds to calculate her risk. The use of technology was framed as a 'process' to 'decrease the risk.' She drew further on risk discourse to frame technology when she associated progressive testing with decreasing her risk for chromosomal disorders. She drew on risk discourse when she talked about decreasing the odds of 'having a baby like that' by utilising the nucal test initially, then the blood test and finally the MSS test. (Toal et al, 2007). Therefore, she validated the increased use of technology as a considered response to technology because the 'greater the use of tests' the more accurate the picture of the health of the pregnancy. The risk discourse promotes the conception of technology as a way of managing the threat of health problems because the decreasing odds indicate a decreasing threat of risk for PCB disease. Specifically, genetic disorders such as Down Syndrome for Sally were a major risk and therefore the need for prenatal genetic testing was framed as a rationale healthcare choice to deal with her predisposition. In summary, when Sally drew on the risk discourse she illuminated her careful consideration of the need to protect the pregnancy through making the right healthcare decisions as an older mother. Technology was framed positively because it could allay PCB health concerns.

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Risk discourse was mediated by women relative to their assumptions of risk. Consequently, for some women technology becomes less of a priority for their healthcare in line with these constructions. In the following except, Beth indicated she was less invested in engaging with technology because she judged herself as of low risk for health problems, and therefore there was less need for testing.

> *Context: Beth talks about going for her twelve week nuchal fold scan which tests the baby's risk for Down Syndrome, and other abnormalities.*
> *Beth: Yeah, umm, I was told about when I went for the twelve week scan umm, you know the lady said to me I was in the low, low risk zone, they measured the neck and stuff. So that satisfied me*

She framed the twelve week scan as a tool to measure her risk for a disorder. Because she was deemed in the 'low, low risk zone' for chromosomal disorders this test 'satisfies' her. Her positive framing around the nature of the scan could be understood firstly, because she constructed technology as a way to measure her risk for specific disease and disorders, and, secondly, due to the negative result provided by the technology, she could place herself in a less risky state. Technology was therefore framed in a positive way due to the perceived value of being able to measure for risk, and consequently knowing she could categorize her PCB as at low risk. Risk within PCB healthcare and the associated uneasiness was therefore controlled directly by the use of technology.

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The women also drew on risk discourse to make meaning of technology in less scientific ways as well. For example they spoke about risk, danger, threat and feeling of not being safe in relation to their health and pregnancy, and consequently they viewed technology as a way of decreasing these states. Irene had her first baby via IVF treatment and she spoke of her experience with IVF in the following way,

> *Irene: '(I was) anxious, I was putting on weight, I, I didn't feel like me, I was poked and probed, and it was part of it, my mindset was, 'this was*

part of what I have to do to get this baby healthy, out and alive.'

Although in this context part of the reason why Irene felt at risk, within an anxious emotional state, was due to the technological intervention, she also viewed technology as the way to give birth to a healthy child. Irene presented her view on technology as the solution to her precarious state, but paradoxically the use of it added to the feeling of danger. Furthermore she was very determined to position her view of technology as of benefit despite the obvious cost to her in terms of feeling of self, 'I didn't feel like me', emotion, health and weight gain. She constructed these transgressions as a necessary sacrifice in order to achieve her ultimate aim, which was to have a successful pregnancy.

Risk discourse was drawn on by the women not only as a reason to frame technology positively but also in a negative way. For some women technology was characterized as aversive because they associated risk with the use of the technology. They drew on the risk potential for possibly dangerous consequences of the use of technology itself. Technology was essentially constructed of itself as a potential risk.

> **Context:** *Talking about whether to use technology for the birth.*
> **Kelly:** *I mean I haven't been through this before, so, um I have no idea what it is going to be like and, and, what I am going to be like mentally at the time. But I do agree that (pause) I mean if you don't need to be monitored, why? Why cause yourself unnecessary stress?*

Here Kelly was stating that despite the risk inherent in her inexperience 'I haven't been through this before', and lack of knowledge 'I have no idea what it is going to be like,' and possible problematic mental state regarding pregnancy and birth, 'no idea … what I am going to be mentally at the time,' she resisted monitoring technology despite drawing on her feelings of risk around the pregnancy. Furthermore she validated her rejection of technology due to the risk associated with unnecessary stress as a result of technology use. She also indirectly questioned the routine use of technology with the rhetorical question, 'I mean if

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you don't need to be monitored, why?' This mediation of conflict was frequently seen in their talk as the women created understandings about where they stood in regards technology within their pregnancy. For Kelly, this mediation of risk within her construction of technology was indicative of her justification to resist the use of it. In her talk she presented herself as taking on a considered approach to surveillance technology in spite of her overall rejection of it.

Risk discourse was associated with the need for technological control over the possibility of things going wrong with the pregnancy. Some of the women such as Sara and Alyssa, had experienced the devastating effect of miscarriage, and so were very vigilant around safe practice for keeping the pregnancy viable. Irene drew on the risk discourse below in her account of her PCB healthcare under a fertility specialist.

> *Irene: … I mean things like Fertility Centre, we signed into a contract, of I mean obviously no smoking, no alcohol, my hands were not allowed above my head for the first fourteen weeks, so I couldn't hand out the washing. I had to wear a heart monitor, my heart rate was never over one hundred and forty (beats per minute). This time (in relation to her second pregnancy which was not under the care of the Fertility Centre) I pushed it to one hundred and fifty (beats per minute). I wouldn't go over that. Just in the back of my head, I didn't want to hurt the baby.*

The risk discourse drawn on by Irene ebbs and flows across everyday behaviours and physiological states, in relation to what was allowed under her contract with Fertility Centre. Practices such as smoking, alcohol, raising your hands above your head when hanging the washing out, and high heartbeat rate over one hundred and fifty beats per minute were framed as risky because they were considered dangerous for the pregnancy by her healthcare professionals. Consequently she talked about a range of behaviours and uses of specific technologies from within risk discourse. This was evident in her congruence with medical advice around her heart rate which was still adhered to even when not under specialist care for her second pregnancy. Consequently this focus

positioned her to draw on risk discourse to make sense of the heart monitor technology. She believed she must use the technology to give her child the best chance. She then accounted this as a reason to modify her behaviour so that she did not put her child at risk. Risk as a discourse for Irene had become reified so much that she mentioned that she monitored her health related behaviour around technology even when she had left the care of her healthcare professionals. These controlling practices for risk were manifested within a power relationship between Irene and her specialists

Some women underlined the experience of technology as a source of anxiety due to the risk of finding out problematic information. Technology was viewed negatively due to their concerns around the consequences of using technology in PCB healthcare.

> *Melanie: ...was there ever a feeling of trepidation when technology, when going to use it, like with the scans?*
> *Irene: Yeah there was, always that thought, always that, 'is he okay?' Um, is my body doing what it's meant to be doing. But because we were at the Fertility Centre, they were just amazing. And they fully, every step of the way, explained things.*

Here Irene drew on risk discourse for a number of functions. She talked around her concern regarding scan results and the ongoing revelations about the health of her pregnancy. 'There was always that thought … is he okay?' Her pregnancy and health consequently became problematic for her due to her use of technology. The risk discourse also informed her of the problematic nature of her body in relation to fertility problems. She framed her body as a site of risk because it could be malfunctioning in a risky way in regards to the pregnancy 'Um, is my body doing what it's meant to be doing?' Furthermore she positioned her body as an object that should proceed in a normal manner as judged by the results given by technology.

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Her provision of understanding and justification concerning her need for scans was based in her health history relating to the ongoing risk of miscarriage. Furthermore she drew on risk discourse in regard to crediting her reliance on Fertility Centre as a source of assurance to counter her concerns about risk with the outcome of the scans. These trusted professional sources of information would dissipate the difficulties around the unknown qualities of pregnancy and technology for her. Furthermore, Irene constructed these discourses from within a context of hope and fear around the pregnancy. Her faith in technology was heightened due to the effect of this context.

By engaging with this argument Irene presented herself as a considerate individual weighing up the problems of risk with technology with the availability of trusted information, within an emotional context. Because she was supported by expert knowledge as provided by the Fertility Centre the use of scans became less risky and therefore less problematic to use. Furthermore, technology was more accepted as normal PCB health practice even in the face of her ongoing concern with the outcome of the test.

There was a consensus within the women that biomedical technological approaches and procedures provided assurance when handling risk around health concerns in pregnancy. Risk discourse was drawn on when things were going wrong for the women, particularly in the case of threatened miscarriage or abnormal test results. In the following except Aleisha explicitly placed emphasis on assurance as something of significance that technology can provide.

> *Melanie: And what does that mean to you when you do those (medical) tests?*
> *Aleisha: (talking about routine medical tests after a period of no movement with her baby) Just reassurance, and reassurance that things are going along well and normal, I mean there hasn't, we haven't had any spikes and haven't has any huge blood pressure rises or drops and everything's just been normal. So um, it's just reassurance 'cause especially for your first one, you just don't know what you don't know.*

The unknowing nature of PCB means Aleisha drew on forms of knowledge such as biomedicine and technology in order to counter her lack of information and to normalise the unknown nature of pregnancy. Furthermore, taking care of emotional and psychological states surrounding risk to the pregnancy by seeking 'reassurance' as provided by technology was framed by Aleisha as justification for her use of it. Her appeal to expert knowledge and technology was manifested out of the need for control and assurances.

In summary, women drew on risk discourse in a number of ways in order to make sense of technology within their PCB healthcare. Risk was a particularly potent motivator to utilise technology due to the stressful and emotional times when PCB was not going well. Consequently, technology became ingrained as a tool with exaggerated abilities for decreasingly the risk of aversive PCB events. The relationship between technology and risk was also dependent on a range of situational factors, such as technological expectation and experience, psychological and emotional states, and healthcare approach, which further mediated the role of risk as an influence within their technology understandings and practices. The overall effect of this discourse was to frame technology as an artefact of power within PCB, in keeping with current social processes around modern day risk.

5.2 Biomedical discourse

Biomedical technology is a tool implemented by biomedical science and healthcare (Gabe & Calnan, 1989). Subsequently, people understand technology as an artefact of biomedical science, and respond to the context accordingly. Women within the study drew on biomedical discourse as a body of knowledge and practices to give meaning to technology relative to their healthcare understandings and practices. The most marked adoption of biomedical discourse evident in the talk of the women was medicalised practices and understandings that reinforced medicine as a dominant discourse. Other evidence of biomedical adoption was when women drew on medical language to construct technology. Biomedical discourse fostered an acceptance of technology because the women

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aligned technology with positive emotive qualities that they associated with medicine. Consequently women routinely used the words 'trust', 'reassurance', 'peace of mind', and 'faith' when describing how they felt about technology.

> *Context: Talking about what technology means to her.*
>
> *Sara: I think it just means to me, more. I think I trust, you know, I have faith in the medical sort of um, not system, but yeah, I think that there's, it's more proven. Like (either) acupuncture or an epidural for pain? You know I know which one I would choose! You know, sort of yeah umm. I, I just think (the epidural) it's more sort of trusted.*

Here the biomedical discourse of institutional trust was an important characteristic in relation to understanding and then choosing to use technology for Sara. 'I think it just means to me, more … You know I know which one I would choose! … I just think it's more sort of trusted.' Furthermore, not all technologies were acknowledged by Sara as equal in her feelings of faith. Sara identified the 'proven' epidural as a better option for birth pain relief over alternatives such as acupuncture. This talk positioned Sara as approving of technology as part of a system, and resultant medicalisation from an orthodox position

The grounding of technology within a biomedical discourse meant for some women that they viewed technology in a very positive way due to the associations of technology with qualities associated with biomedicine. The appeal to bodies of greater knowledge or wisdom bequeathed to institutions was advantageous because it could offer support and direction relative to their practices. This was significant in this context of pregnancy because the women were dealing with important emotive matters such as pregnancy, birth, life, and death in the event of miscarriage.

> *Melanie: So what did the technology mean to you?*
>
> *Irene: Um honestly, it was a god send, like it was. I'm not religious but it was a peace of mind for me. Um it's incredible what they can find out. And*

I mean I wouldn't have Billy, and who knows I may not have Ella cause yeah, they might have never figured out what was wrong with me without the technology, I may have gone through miscarriage after miscarriage um.

Irene's associations between technology and diagnosis indicated a reverence for the ability of technology to provide critical information for her pregnancy healthcare. In her case blood tests and scans supported the diagnosis and treatment of her reproductive condition that was causing her to miscarry. Irene underlined that this technology was a 'godsend' and 'miraculous' in spite of her clarifying that she was not religious. This declaration of deep trust gave credence to her claim that she has done the right thing in choosing technology, and the subsequent using of it in diagnosis and treatment for her reproductive health problems. She stated her position clearly with the use of 'honestly' to reinforce her appreciation of technology. She emphasised this appreciation when she finished the sentence with 'like it was'. Furthermore, 'peace of mind' for Irene was an important state to achieve, particularly when she was dealing with the tragic aftermath of child loss and fertility problems. Consequently Irene's reverence for technology was contextualised because it enabled her to become pregnant with Billy and Ella, and prevented her from the horror of ongoing miscarriages. She stated that technology had 'incredible' abilities to find out medical information. This emphasised that it was a positive tool to use due to these powers. Technology was essentially constructed by Irene as a potent institutional answer to her medical concerns, and consequently she had a very strong sense of belief in it.

Irene also demonstrated the role of past experience within biomedicine as a key influence within her current technology practices and understanding. Her acceptance of technology was based on deep gratitude carried over from her past beneficial PCB technology as well as her institutional belief in it.

The biomedical discourse was also drawn on by the women in order to understand how technology operated. In answer to this, women framed technology as a biomedical tool associated with scientific characteristics. Technology was

therefore appreciated as a tool to monitor, test, and survey, treat and care for the women and their pregnancies within the biomedical context. Scientific qualities such as precision and normalcy were also drawn on to characterise technology. Thus faith in the accountability of technology meant it was viewed positively.

> *Melanie: And how important were those tests?*
>
> *Sara: I actually found them really important for the simple fact that it. I think with pregnancy, you want a crystal ball, you know you want this crystal ball to tell you that everything is going to be. I guess after my first experience (her first pregnancy ended in miscarriage) it's, you just yeah you want it to tell you that everything is going to be okay, and sort of see into the future, and I think the blood tests were really good because if, you know like, and I kind of, yeah definitely preferred that to yeah.*
>
> *Melanie: Or sort of? What were the alternatives, because …*
>
> *Sara: Um, well I guess if you don't have the blood tests and you kind of meander along thinking everything's okay and you know like and then, I don't know, you go to the toilet and there's blood, and everything's not so ok, yeah.*

Sara framed technology as something positive and uncomplicated in relation to her PCB healthcare because she was able to find out things definitively and act on them in the context of threatened miscarriage. She positioned technology as a better way of knowing. It was a 'crystal ball to tell you that everything is going to be … okay.' Furthermore biomedical science and technology was a preferred basis for knowledge in comparison to subjective experience as a way of understanding pregnancy and miscarriage. She positioned biomedical technology as beneficial because without it, you could be at risk of just 'meander along thinking everything's ok' It positioned her subjective knowledge as less favourable than test results in terms of managing PCB healthcare.

The women drew on biomedical discourse to frame technology as a medical tool for testing medical concerns. Some women were very explicit with their appreciation of tests to find out medical information due to the moral and social

content of their concerns.

> *Melanie:*   *So with the scans, the early scans when you were actually having them, what did it bring up for you at the time?*
>
> *Alyssa: Very much ah, with the miscarriages, it was, it was good to have an answer … if the things were good, bad or otherwise.*

Alyssa clearly wanted to find out what was happening with her pregnancies that resulted in miscarriage. It was 'good to have an answer' as provided by the scans. The need for answers was significant in spite of what the answer may be 'if the things were good, bad or otherwise.' Sara also echoed the sentiment that technology could provide access to medical information about PCB.

> *Sara: 'I don't know, the hospital is you know, like they are there obviously the specialists, they know what they are doing, it's I guess you feel more confident um that if there is something wrong, then they will, you know, like it will be found and if anything can be done then that's, you know they can do it sort of thing. Yeah, I guess bigger confidence, that you are in the right kind of place.'*
>
> *Melanie: And in relation to technology, what does that bring?*
>
> *Sara: I believe in all that kind of thing, I believe people should have the choice.*

Sara also constructed technology as locatable at a site of biomedicine- the hospital. Technology in combination with specialist care provided by a better prepared site for medicine was framed as increasingly reassuring and capable, in the event that something could go wrong with the pregnancy. The belief in technology was therefore justifiable due to her faith in the capabilities of medical technology at the hospital. Words such as 'bigger confidence', 'confidence', and 'right kind of place' were used by Sara to position her understandings as correct. Sara further expanded her view that technology was advantageous by stating her belief in the right to choose technology.

Women drew on biomedical science concepts around the significance of testing and treatment to understand the role of technology as a tool for pregnancy healthcare. This sentiment allowed the women to determine whether their pregnancies were progressing in a normal fashion, as determined by medical science.

> **Context:** *Talking about her experience with tests.*
>
> **Sophie:** *... I took a home kit (pregnancy test kit) in the loo. 'Oh! I am pregnant! And it was about, um, about two weeks before I went to the doctors after that. And they took blood tests to confirm it, um and obviously check that everything is okay in me, just check the iron levels and stuff like that.'*
>
> **Sophie:** *Ah, and here I was constantly sort of checked, monitored, swabbed, and bloods.*

Sophie drew on biomedical discourse to make sense of technology as a tool to confirm the pregnancy initially with the 'home kit in the loo.' Sophie associated the important diagnosis of a positive pregnancy with the use of technology as shown in her exclamation 'Oh! I am pregnant!' She ultimately confirmed the pregnancy at her doctor with blood tests and a check up, which gave legitimacy for her appeal to the powerful authority of medicine. Sophie contextualised technology within medical discourse due to her association of technology as part of her healthcare under her doctor. Furthermore, Sophie took part in series of medical technology tests to see if 'everything is okay in me.' She framed her use of technology at the doctors as routine in nature in accordance with her medical care. She iterated and accepted the role of technology in numerous forms as part of medical monitoring during her pregnancy. '... I was constantly sort of checked, monitored, swabbed and bloods.' Technology was thereby presented as a routine practice by Sophie as part of her numerous PCB medical practices and understandings.

It was particularly in the case of women who had earlier pregnancies that required

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medical intervention or fertility problems that technology intervention was framed as a necessary component in order to provide a safe pregnancy for the mother and unborn child. These essentially reinforced biomedical discourse as a dominant source of information for comprehending technology.

> *Irene:* *So technology is there to be used, yet and with him we had every test under the sun and we were over, (laugh) over tested if anything, um (pause) but at the end of the day it gives you peace of mind.*

Due to the risky nature in particular for IVF babies, mothers were extremely careful about their investment. In this excerpt, Irene showed her conflict in terms of feeling like she was over treated, but the intervention was necessary for a 'peace of mind.' The talk, 'technology is there to be used', placed a deterministic emphasis to use the technology because it is available, as opposed to more reflective appraisal around technology. It positioned the woman as an inevitable user of technology. Overall, Irene constructed technology as both prescriptive, and something that necessities sacrifice in order to achieve bigger goals such as reassurance and health.

By relating technology with biomedical discourse, the women were able to characterise technology as a product of medicine. For example, Sally drew on medical jargon in acronym form such as 'NT' or 'MSS' when discussing types of medical tests. The use of medical language for common understandings will further reify biomedical discourse. It may also possibly further medicalise women, health and PCB, in light of this level of acquisition with medicine and pregnancy technology.

The biomedical discourse was prevalent in how women construct and therefore understand their bodies and bodily functions as well. This was evident in a number of ways. For example, metaphorically speaking the biomedical body was akin to a machine with emphasis placed on systems and organs as opposed to a

holistic whole person. Furthermore when the body was deemed medically unwell by the women, it was inadvertently in need of 'fixing' through biomedical intervention. Consequently, women positioned themselves as needing further technology in the event their health became worse, in concurrence with specialist care that was deemed an expert in biomedical care.

Irene, who had experienced miscarriage, was suspect to these biomedical concerns when she spoke of her recent PCB experience.

> *Irene: I went for a scan, we were at a scan, and they said that the babies didn't have a heartbeat, um, and that they, they did another scan before I did the D and C because it was, it's not normal, the HcG should not be rising if you've got a dead foetus in you, technically your HcG levels should be going down, um.*

This discussion by Irene was constructed around the escalation of technology by biomedical practitioners for her care. Because the scan indicated that the twins didn't have a heartbeat, Irene, while drawing on biomedical discourse in relation to her pregnancy care, progressed to further scans and a subsequent D and C. Therefore, Irene, while subject to medical testing and procedures, viewed her pregnancy as abnormal in the context of the HcG test results objectively ruling the pregnancies as unviable. She constructed the pregnancy as non viable through describing it as not 'having a heartbeat'; that it was, 'not normal'. By using the term, 'dead foetus' that is signified by HcG test results, she objectified the pregnancy in clinical terms and away from emotionally engaging subjectivities such as 'baby'. Irene constructed herself as a patient under biomedical care with a progressive use of technology as part of biomedical care, and that due to this position she followed correct intervention of her pregnancies when they were deemed unviable.

Some of the women drew on biomedical ideas around the body and pregnancy being framed abnormal by biomedicine, as part of the process of using biomedical approaches associated with technology.

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Iris: We don't want interventions, you know, as soon as they start talking about Downs, all of a sudden, a possibility of amniocentesis and all the risks that go with these things, if we knew there was a history of it, we would probably do it just to be certain, but cause both of us are under 35 and there is no history of it in either of our families. We have just decided nup, we will have the 20 week scan, which will be quite cool and that's when you do all the anatomy scans, they check that all the bones are the right length and check that the heart has got 4 chambers and it, it is quite cool that one cause you get to check out what's going on with the baby, check it a bit, see that everything's working, so I quite like that one (pause) yes, so nah, I've only had scans and just the usual blood test just to make sure you haven't got antibodies and that your blood type and babies blood type aren't going to attack one another and that sort of thing.

Iris strongly resisted the possible indoctrination due to her ideas around technology and the inevitable repeated exposure when under the care of biomedical practitioners. 'We don't want interventions you know as soon as they start talking about Downs.' She drew on both biomedicine and risk discourse as reason to view technology as a hazard for her pregnancy, 'a possibility of amniocentesis and all the risks that go with these things'; but at the same time showed her interest in the benefits of scans, 'to check out what's going on with the baby', and the role of medical kin 'history' as a source of information around the potential for technology. She framed technology and her actions under biomedicine as positive in line with wanting to see if everything was 'working'. Her body and potential for pregnancy was constructed in biomedical terms, and was judged by biomedical measurements which have the function of positioning technology as a congruent choice for pregnancy care. In line with this position, she had scans because they 'check that all the bones are the right length and check that the heart has got 4 chambers.'

She drew on the good mother discourse in her depiction of herself as constructive and pragmatic around her constructions of technology, to 'make sure you haven't got antibodies … and that sort of thing'. These contentions offered by Iris show

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how the negotiated nature of discourse around technology was particularly open when more than one discourse is drawn on to construct technology in PCB. She drew on risk, biomedicine and the good mother discourse as a way to judge whether technology was viable for her.

In summary, the biomedicine discourse was displayed in the talk of the women that linked technology with biomedicine and associated qualities. It was a very prevalent ideology within the talk of the women due to the dominance of biomedicine within New Zealand PCB healthcare. However despite the dominance, there was a range of positions in line with drawing on biomedical discourse both across and within the women. Acts of resistance were shown by the women to position themselves against biomedicine discourse relative to their use of technology. This was particularly to stop further medicalisation of PCB due to concerns of the women over normalisation of new medical technologies. Due to the highly moral and emotional content of PCB experiences, by drawing on biomedical discourse, the women were also giving an objective view in regards to what was happening and how to deal with problems related to pregnancy and childbirth.

5.3 Consumerism discourse

Consumerism is an emergent discourse in relation to PCB technology. This is due to the impact of privatising PCB healthcare and greater social neo liberal movements at work within society that position people to commodity health, and related aspects such as technology. Experience with consumerism was dependent on the context of the technology. For example, in the study, experience with private IVF treatment with specialists over the period of the pregnancy positioned the women to be more engaged and therefore influenced by consumerism that a one-off routine scan with an associated cost. Consequently, there were different forms of consumerism relative to constructions of meaning across the women, dependent on their approach and experience in regards to PCB healthcare. Consumerism was often organised around the economic worth of pregnancy,

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health and life, which framed their evaluation of what technology meant to them. Talk from the women in regards to consumerism was characterised by associations between technology and commercial interests. It served different functions for the women in regards to understanding and therefore mediation of technology.

In the following passage Irene illustrated the role of economics within her IVF treatment.

> .   ***Context:*** *Irene is discussing the reasoning behind her decision to get pregnant using expensive IVF treatment that resulted in her child, Billy, after losing a previous pregnancy.*
>
> ***Irene:*** *Yes, his cost around about fifty-five thousand dollars. But we got twelve and a half grand back on insurance.*
>
> ***Melanie:*** *Oh, ok (pause). I didn't know it was so expensive.*
>
> ***Irene:*** *Yup, but that's part of it, that's you know, what you do, we didn't have another option. If you really want a child then and after losing those ones. I mean, it's, there is a void and you do whatever you can to get them. I mean the stupid thing about it , the drugs are only fifteen dollars, it's the appointments, it's the specialists, it's the testing that you pay for.*

She constructed her decision to use IVF treatment and subsequently be subject to the cost as part of her driven need to be a mother. She positioned herself as having no other options and in an extreme childless 'void', and so was justified in using IVF treatment. It illustrated the power IVF specialists have over infertile women desperate to become pregnant.

The link between consumerism and medical specialist is supported and maintained by the dependence on specialist technology by infertile women. Technology is therefore constructed as a necessary component as part of the bigger aim to become pregnant.

Beth, in comparison, also drew on the consumerism discourse but she resisted it

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when making sense of technology.

> *Melanie: But um did you consider doing other um private health services?*
> *Beth: No, well I did initially, only because my Aunty who works with children said, 'Aw, you know, I think you should go through an obstetrician, 'cause I see.' She put the scare up me I guess. She said, 'She sees so many sick babies. But oh, after talking about it with Mum and through my husband as well, nah. I thought that's ridiculous, paying 3 to 4 thousand dollars to go to an obstetrician, no, if in need, if there's a need for him, then that will be provided down at the hospital, so um.'*

The consumerism discourse functioned to position her decision to be pragmatic about the costs and needs associated with specialist care, which included associated technology. The act of rejecting specialist care positioned her to view technology in a pragmatic way. Despite members of her family pressurising her to engage in more expensive forms of PCB care, she resisted the consumerist ideal that more money means better health outcomes. She positioned herself as considerate in claiming it 'ridiculous' to spend money on PCB, when it is available in the New Zealand public health system.

In summary, the consumerism discourse was displayed in the talk by the women, which acted to link technology with consumerism. Due to the nature of placing an economical value on health and childbirth for those that engage in private healthcare, it had the potential for reducing people to economic terms. However despite these problems, women justified their use of technology and framed the associated cost as a sacrifice in order to achieve a child. Women that resisted it focused on the lack of need to utilise expensive forms of technology or specialist care.

5.4 The good mother discourse.

Women drew on the social and cultural construction called the good mother discourse, meaning to identify and behave as a mother in relation to biomedical

technology. Part of being the good mother is the care of the yet to be born child; to take care in any way possible as evident from your perspective. The meaning of technology was therefore mediated by women with divergent opinions but with the same aims and principles of approaching their PCB through the good mother discourse.

This discourse can be understood as a framework for the women to draw on in order to create their identity and presence as a mother. Within the greater cultural and social context, there is great pressure to become a mother as part of being a woman, a wife and a family person. PCB can be understood as a socially sanctified life event for women. The good mother discourse therefore becomes significant for those women who needed fertility treatments, and for those wanting to make sure the pregnancy has as much medical technological help to ensure a safe and healthy pregnancy.

I have added the word 'good' when describing the good mother discourse in order to illuminate the extent of commitment and actions displayed by some women in relation to taking care of their child. It also signifies the reification of good mother practice from a societal perspective. Under this direction, there is emphasis placed on women to sacrifice personal matters in order to support family and pregnancy.

The mothering discourse was very strong for the women in terms of giving direction on how they should respond to the use of technology as part of their PCB healthcare. This discourse clashed with the biomedical discourse around the need for medical care for newborns, particularly in the event of a birth that required a lot of technology.

> **Context:** *Sally compares giving birth to Dominic and Alex with relatively little technology compared to an earlier birth with Emile who needed a lot of technology intervention.*
> **Sally:** *Then after he(Dominic) was born, such a different experience, they gave him to me, they didn't take him. This tiny little baby and I gazed at him and wondered, like wow! (Laugh) I can touch him whenever I want to.*

Melanie: How was that?

Sally: So cool and so different, made me realise what, as much as I needed to get the medical stuff for Emile, there is an emotional side too. I love him dearly ... I am a real touchy person, and I hated not being able to touch Emile.

The wonder of childbirth was evident in this talk from Sally. The good mother discourse within this context acted as a form of social glue to connect the mother and the child together in a maternal bond, over the two different birth technology experiences. By describing a child as tiny and under her 'gaze' and 'touch' she verbalised her maternal relationship driven by the need to care for the child. Her vocalisation that she was annoyed at the technology intervention that meant she could not touch Emile could be understood as further good mother positioning, because part of being a good mother is one that connects with her children. Technology was framed negatively because it prevented her from being a mother. She also drew on the good mother discourse as a way of connecting with the child, and consequently she positioned herself as a mother that while drawing on technology as a positive aspect of healthcare, also recognised the emotional need of birth as well.

The good mother discourse positioned women as jugglers of multiple ways of viewing technology. This was not an easy position to be in because it was difficult to compromise on principles within pregnancy and healthcare, when caring for the sick newborn and births needing intervention. On one hand Sally viewed technology as beneficial because it provided a successful birth, but on the other hand technology, though deemed medically necessary, was viewed as an obstruction. She viewed it negatively because it prevented her from engaging in the emotional maternal bond at childbirth.

The good mother discourse can be understood as one way women shaped their approach to technology. For Nathalie she acknowledged that despite idealism, sometimes it was pragmatic to get help in the form of medication for her low iron

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levels to take care of herself.

Context: *Talking about when it is beneficial to use technology when coming from a natural anti-interventionist point of view.*

Nathalie: *Yeah, not that I'm too the extremer. Like I was saying, like I've got to take some iron pills you know. If you need something, you need something. Like iron, the iron levels were low, and I was feeling horrible.*

This position demonstrated that by adopting the good mother discourse within her decisions around the use of technology, Nathalie appeared pragmatic and capable in the context of making decisions relative to both her and in a more general sense, family healthcare. Although she recognised her fringe position, she did not have an 'extremer' perspective, because, 'If you need something, you need something.' By drawing on good mother practice she displayed meditative qualities in regards to her appreciation of technology.

Some women also drew on the good mother discourse to construct technology, but comparatively, they constructed technology as less dominant in terms of being unwanted, unfavourable or of roughly equal relevance for PCB. They placed weight on other ways for the pregnancy to proceed from the perspective of the good mother. This may have been due to the orientation of the mother to draw on other non-technological resources, and rejecting medicine and technology as the dominant way of monitoring PCB healthcare. Beth in the following passage, talked about being an older mother and how she dealt with the risk of unhealthy babies.

Melanie: *When you see things like um you know um, 'reduce your risk of birth defects.' What does that bring up?*

Beth: *Yeah, just think positive.*

Melanie: *Yeah, is it um with not thinking about it, is it a sort of um like you know you don't need to worry about it? Or is it more of a conscious thing?*

Beth: Oh it's more of a positive, I, I'm perfectly healthy, I've had a healthy life myself and I eat healthy … Yeah didn't really worry too much about the scan to be honest.

Beth positioned herself as someone who took care of herself and her pregnancy through her belief that she had prepared herself psychologically by thinking positively, and through being healthy by living and eating correctly. These judgements came from a wider social and psychological context that shapes her ideals around being a good mother. As part of this positively, she had faith in her preparation and belief that things would be fine with the outcome of a healthy PCB. She judged these practices as more significant than the outcome of a scan because she was already engaged in good mother practice around PCB. Overall, she presented herself as an active participant in her role as the 'good mother'. And as part of this framework, she was involved in different practices to take care of the pregnancy which included using technology, but critically is not dominated by it. This subjective positioning could be understood as a meaningful option for women relative to being dominated by medicine and technology when making sense of PCB.

Kelly drew on the good mother discourse as well in order to mediate the role of technology and to resist technologisation of her PCB. This could be understood due to the position of faith as a central perspective for her.

Melanie: So with technology, what does it mean to you? (Pause) So you were talking about scans, and?

Kelly: … It's a good way of finding things but if it's going to be used to alter what would happen (pause) naturally.

Melanie: And so and so how did you come to that decision?

Kelly: It would come from my faith probably, I'm Christian, so um you don't want to obviously interfere with what's God's got planned or anything, and he has created all beings, whether they are um fully formed or not, so.

Kelly drew on her Christian faith to position her construction of technology as

beneficial to find things out, but not to intervene medically. This was due to her position that technological intervention in the natural course of pregnancy was contradictory to her faith. This position was also exceptional because she placed weight on the notion that the pregnancy was to proceed as it was meant to, rather than to view PCB as a modifiable process. She did not view pregnancy as necessarily ending in a healthy birth; in comparison she positioned her outlook as one based in what God had 'planned', 'whether they are um fully formed or not.'

This way of viewing pregnancy was unique because it nullified the desire or need to use technology. This was due to framing pregnancy and the child in a fatalistic manner rather than one that can be altered by technological intervention. Technology as an intervention was less likely to be framed in positive deterministic characteristics due to this positioning.

In summary, both Beth and Kelly drew on the good mother discourse because they were centred on ultimately caring for the pregnancy but due to different perspectives inherent in their mothering perspectives, they mediated their understanding and use of PCB technology.

> *Iris: We have just decided nup, we will have the 20 week scan, which will be quite cool.*

Iris drew on the good mother discourse through framing her actions as considered and pragmatic. In spite of being critical of technology, her negotiation of it is presented as considered and made with her husband, as part of being socially responsible in the context of her family. Iris presented her decision to use technology, in this case anatomy scans, as one that was made to her satisfaction rather than being dictated by biomedicine as the authoritive voice. She vocalised her agency within her constructions and use of biomedicine, as part of placing boundaries around what was acceptable healthcare practice for her pregnancy, her healthcare and her body.

Furthermore the good mother discourse served as a way for women to navigate

other discourses when in conflict over making meaning or decisions around controversial technology, particularly if they disagreed with dominant sources of information such as practitioners or family members. This was demonstrative of how women can organise their constructions relative to unknown technologies.

In summary, the good mother discourse involved talk which associated technology with the aim of facilitating maternal ideals. The good mother discourse was used by women who decided to approach PCB technology with the aim of taking care of the child and their health in a capable manner. Consequently, technology, while viewed positively as a beneficial medical tool was also resisted or disliked in the event it prevented the women from carrying out their needs as a good mother. Other dominant discourses such as faith or health perspectives created sites of conflict in relation to deciding what technology meant for the PCB. It was a nuanced process depended on what was deemed important by each woman. It is worth noting here that there was overlap with the moral discourse due to the socialised nature of the good mother discourse. These mixtures of discourses added further depth of processing for the women to work through. Overall, the women faced a complicated range of relationships between the good mother discourse and PCB expectations and demands that ultimately mediated what technology means to them.

5.5 Naturalism discourse

The women often drew on natural discourse when making sense of biomedical technology within their healthcare. Natural discourse within PCB referred to non-interventionist understandings and practices. Women frequently positioned the natural approach to PBC as the alternative to a medical pregnancy healthcare approach that relied on medical technological intervention. Natural discourse centred on describing pregnancy as a natural process that should be intervention free. As will be illustrated, women drew on natural discourse for a number of different functions, such as suspicion of medical technology, faith in religion, faith in the capability of the pregnant body, faith in natural alternatives to

medicine and worry about harm to the baby due to the impact of intervention. Consequently women that drew on a natural approach tended to construct technology in aversive terms such as invasive, interventionist, harmful, and unsafe with side effects.

One form in which the natural discourse appeared was when Kelly brought up her Christian faith and therefore position that advocated a natural pregnancy and birth.

> *Melanie:* *So what does technology mean to you? (Pause) So you were talking about scans and?*
>
> *Kelly:* *… It's a good way of finding things out, but if it's going to be used to alter what would happen (pause) naturally.*
>
> *Melanie:* *And so and so, how did you come to that decision?*
>
> *Kelly:* *It would come from my faith probably, I'm Christian, so um you don't want to interfere with what's God got planned or anything, and that he has created all … beings whether they are fully formed or not.*

Kelly constructed technology as a possible interference for 'what's God got planned' because it may 'alter what would happen naturally.' The inference here was that pregnancy and birth are destined by God to progress in a certain way. By intervening with medical technology to correct medical problems it stood we were playing with God's plan for the pregnancy, the unborn child and indirectly, the impact of the child within the family. The underlying message was that God's creations should be respected as they are, regardless of whether they are 'fully formed or not'. Intervention was therefore seen as problematic through the lens of her Christian faith. Kelly therefore had to weigh up her decision around choosing technology dependent on her consideration of religious beliefs and need to 'find(ing) things out' about her pregnancy. She did not reject all technology outright because she recognised that technology forms vary in their invasiveness. For example, some technology was good because it allowed her to 'find(ing) things out'.

Melanie: And so what were quite different about the technologies you decided not to use?

Kelly: Um the main reason would be they were more invasive. A blood test is invasive, but it but it's not going to harm the child.

Melanie: Yes. With the blood tests, why did you decide to go ahead with the blood tests?

Kelly: Because everyone does it! (Laugh) and because it didn't really seem to be such a big deal, and a blood test to find out whether I am healthy, and if I am healthy, then the baby is healthy as well. And if I was wrong we could do something about that.

Here Kelly talked around her decision to go ahead with blood tests relative to other technologies. She viewed blood tests as acceptable form because the tests themselves were not going to 'harm the child.' With this she has framed the unborn child as a fragile being in need of protection from potentially dangerous forms of technology. She negated the problems with using blood tests despite wanting an overall natural approach 'because it didn't really seem to be such a big deal.' She drew on social acceptance of blood tests as a form of validation around her decision to use blood tests 'Because everyone does it!' Kelly further justified the use of the test as the right thing to get checked because it provided information about the health of herself and subsequently, the health of her child   '...and a blood test to find out whether I am healthy, and if I am healthy, then the baby is healthy as well.' This collection of knowledge allowed her to be a proactive mother and take care of the consequences. This could be regarded as positive health related behaviour. She could 'do something about that' in the event of abnormal lab results that she had inferred she was not expecting anyway 'And if I was wrong...' There was also a difference in investigating how healthy the pregnancy was, as opposed to testing for disease and disorder. The search for something positive had less negative connotation in comparison to confirming something was abnormal. This may have made her decisions more palatable for Kelly when deciding to go ahead with one test in comparison to another. Correspondingly, healthcare intervention due to being healthy may have been seen as more positive and non interventionist than intervention when things are

abnormal. Overall she was able to justify using this type of test because they were more congruent with her natural discourse, in comparison to invasive technology that she had rejected.

Natural discourse was drawn upon in terms of how the pregnancy was initially approached which has the flow on effect of informing technology conceptualisation. Iris, in the following, discussed this

> *Iris: I think with intervention necessary, then do it, but sometimes you, I think sometimes that the c section rate is a bit high, and sometimes if the women were left a bit longer, things might work out ok, I think its sometimes about having faith in your body, and (pause) we're not as a society taught to do that anymore, we are not taught that child birth is a natural process, that you can do it, its all scary and all you know its big scary thing your going to do, when actually its one of the most natural things you can do, and if you just listen to your body and listen to your midwife, I think you can do it.*

She framed technology as something that needed to be considered in line with responding to the subjective experience as a way of judging the PCB. By positioning herself as coming from the natural perspective she placed emphasis on 'faith in your body' and from this perspective she reified birth as the 'most natural thing(s) you can do.' From this point she argued against the social trend for c sections and quick intervention in birth because if, 'things were left a bit longer, things might work out ok.' She constructed a dichotomous argument by positioning technology, medicine and medical practitioners in comparison to pro natural PCB care under the support of a midwife. Her critical positioning also extended to critiquing the role of society in turning against natural ways of PCB healthcare, and engaging in unnecessary intervention. Technology therefore, was constructed in problematic terms due to the central importance of natural discourse, and associated agents like midwifes, within her approach to PCB healthcare.

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Women also drew on natural discourse when talking about the objectives of the medical and natural approach.

> *Iris: Obstetricians, your more likely to get more interventions during labour, they are more likely to, um, try to speed the labour up, or to, there is just more chance of intervention, and I'd rather not have that, and I know with the midwife you're not going to get that unless you need it, I would much rather be with a midwife, they do an excellent job.*

By positioning herself as pro naturalist, Iris constructed an argument around rejecting medical technology and positioning natural PCB healthcare as advantageous. She did not want to engage in technologies that crucially are unnecessary due to her pragmatic view. She positioned obstetricians as PCB carers that were more likely to use interventions, and would try to speed things up in terms of child birth. By drawing on the natural discourse, she appreciated a more considered approach to technology and subsequently, she had selected a midwife as her PCB carer. Overall, she presented herself as actively rejecting technology, pointedly, on a number of practical levels and seeking out PCB carers that would, she believed, provide her with better care than medical specialists.

Although some women such as Iris and Nathalie were very much in accordance with natural discourse as a basis for their understanding and therefore presented a strong rejection of technology, all women were pragmatic about the need for technology in line with constructing birth being as a big unknown, fraught with problems and potential medical emergencies.

5.6 Morality discourse

Moral discourse was characterised by patterns of the talk that referred to moral aspects in relation to their construction of technology. Women that drew on moral

discourse often focused on the social factors surrounding the use of technology and when the consequences of using technology became a concern for both them and the wider context of society. Technology therefore became constructed with moral and socially charged characteristics. Due to the value basis for moral discourse, it was often challenging for the women to express. Consequently, they resisted or were unsure about how or what to say when issues appeared. The moral basis of this discourse was particularly engaging for women who oppose technology and therefore it could be considered a site of resistance for the women in line with competing dominant discourse.

The moral discourse was present generally as a value based position reflected within the talk of the women. In the following passage, Kelly discussed the morality around using technology.

> *Kelly: ... just because it is available, should we use it? And for different people, um different, everyone has different morals where ever they come from, um (pause) and obviously they play a big part as to, I mean some very religious people may not use technology at all.*

Kelly constructed technology as problematic and furthermore acknowledged the wider notion that technology was judged differently based on different perspectives. This position allowed her to present her association between technology and moral judgement, and justified her pragmatic approach that we needed to question why we should use technology, 'just because it is available.'

Moral discourse could be problematic for women due to dissonance between progression of technology and what was acceptable for society. In the following passage, Alyssa grappled with the problems

> *Alyssa: Yes I think um, I think because I am grateful for the children I've had and am having that I think we should be grateful for what we get, um sometimes technology can go too far, with genetic engineering (pause) and you know, copies and things like that, but mmn.*

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Melanie: You say goes too far, um?

Alyssa: Designer babies, um I want a blonde haired, blue eyes, I think we are starting to look at Hitler's thoughts there really?

Alyssa associated the progression of technology as morally problematic by claiming that technology such as genetic engineering is 'too far'. This acted to illustrate why she deemed technology could be thought of as a matter of morality and suggested that we need to be careful around the direction of technology. Despite the medical advantages that technology could bring, she was wary of possible 'designer babies.' The moral discourse functioned as a site of discussion and engagement with personal understandings and belief systems. This act could challenge orthodox scientific views regarding technology and the meaning of it relative to the progression of society. Consequently, public problems around technology were constructed as meaningful on the personal level for Alyssa.

In summary, women drew on moral discourse to make sense of PCB technology. By drawing on ideas that acted to engage and resist moral discourse, the women constructed technology as problematic. This position therefore justified their arguments that technology and new forms in particular around genetic engineering, needed to be considered for the good of society overall. The overall effect this discourse has been to question and problematise technology and what it meant for the women. Subsequently, critical views regarding technology were supported by the women in regards to moral dimensions.

Although it was clear that the women mediated the meaning of technology relative to their needs and understandings, the overall consensus was that technology was a key feature of pregnancy and birth healthcare. It remained unpacked by pregnant women due to a blanket acceptance of technology as routine for pregnancy. As Beth says, *'Oh look I mean if it's going to make it easier for me, I don't have any worry about technology of any kind.'* This understanding was so prevalent that women struggled to come up with alternatives to the use of technology, particularly in the event of needing medical

intervention.

In this chapter, risk, biomedicine, consumerism, the good mother, naturalism and morality discourse were discussed in terms of how they were expressed by the women and what influenced the construction of these discourses. In the final chapter, the consequences of these discourses will be discussed.

Chapter 6   Conclusion

"If all categories are themselves unstable and the idea of rigid universalist divisions are untenable, then it is difficult to employ meaningfully universal categories of good and bad, right and wrong" (Shildrick, 1997, p.104)

Biomedical technology is a critical component that must be considered by pregnant women in relationship to their pregnancy and childbirth healthcare within the modern context of New Zealand healthcare. In order to examine the consequences of technology in New Zealand, my research aimed to explore the meaning of biomedical technology to pregnant women and to PCB healthcare. Due to my research interest in social psychology, I wanted to particularly focus on the social and psychological processes utilised and the consequences.

The analysis of the talk from the women in the previous chapter revealed that they based their consideration of biomedical technology on a number of dominant discourses. These discourses included biomedicalisation, risk, naturalism, consumerism, moral and the good mother discourse. The good mother discourse was distinguished because the women drew on it to organise other discourses in terms of making sense of PCB technology. The discourses did two things; firstly they allowed the women to construct technology in a number of ways, and secondly, as a consequence of this positioning, the technology was able to be understood, rejected, utilised and so on depending on the individual variance for

each women. The purpose of this chapter is firstly, to offer some general conclusions around the consequences of these discursive practices for the women, especially the social and psychological processes and consequences. Secondly, limitations of the study are discussed and finally, I consider the implications for future research and practices regarding pregnant women and their health based on the findings from this study.

6.1   *Discursive positioning and the consequences*

Women do not make meaning in a social vacuum. Within the New Zealand context of increasingly globalised western biomedical healthcare, there are a number of discourses for the women to draw on. The women can reside, resist, and mediate these options in order to make meaning and the outcomes are dependent on the context and the situation of the women. In Chapter 5, I was interested at looking at what the discourse was, what it did for the women and under what circumstances was it drawn on. In this section, I want to expand further on the women's discursive practices to evaluate the consequences of these constructions.

Talk by the women was flexible in nature and can be characterised as complicated, inconsistent and contradictory, both within and between the women. Some women were heavily resistant to technology, while others welcomed medical technology as a routine part of their pregnancy healthcare. The cause of this variance was due to a number of social and psychological reasons. Firstly, the complexity of concerns and issues that women faced when dealing with PCB healthcare means there was the potential for a wide range of contentions and mediation outcomes. Secondly, the complexity of discourse changed in relation to the contested nature of influences apparent within the talk of the women. For example privatised healthcare and challenging unorthodox health approaches as part of modern healthcare will mean further contention for the women to contend with. The context can be characterised as an unclear context from which to draw on. And thirdly, because technology in PCB is relatively new in terms of

healthcare practice and policy, women have to deal with their position as pioneers in terms of making sense of technology. Social networks that the women draw on may have limited knowledge to offer the women. This means there is a lack of collective knowledge from which the women can draw on in their constructions of technology, and they are therefore relatively isolated when coming to terms with new technology.

The complexity of situating discursive practices around PCB technology was revealed by conflicting views on technology within the women. For example, Nathalie positioned her rejection of technology as an act of resistance to her PCB being medicalised. However her more extreme perspective was tempered by the concern around what was the best approach in the event of something going wrong. It was useful to frame these decisions as taking place within what I contemplate the 'good mother discourse' framework. This framework provided a guide for positioning the competing discourses in the face of ambiguous understandings that were infused with loaded values. It was evident that all women except one placed an imperative on the care of the child at the expense of anything else, which included negotiation of key features of their life such as health and identity. For those women who had sacrificed a tremendous amount for their IVF assistance, the use of the good mother discourse was very apparent. This was understandable due to the stronger need to justify their considerable sacrifice in terms of money and psychological investment

Life stories and perspectives around concepts such as illness, miscarriage and life, vary from individual to individual and acted as discursive 'lens' in relation to discursive practices. Furthermore, these differences were expressed in variation across their discursive practices; different discourses being drawn on for different functions. Aleisha framed IVF technology in terms of consumer discourse in order to position herself as behaving in a rationale way to achieve fertility. For her there was real social and personal pressure to have a child. In comparison Irene also drew on consumerism as a way of constructing technology with her IVF, but in contrast to Aleisha, she drew on the problems with consumerism in order to

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illuminate her values around the commercialisation of her health. These findings highlighted the central premise of discourse analysis in that talk will differ to serve different services (Potter & Wetherall, 1987).

In comparison to variance and inconsistency, there was also consistency in the discursive practices shown in this study. This coherence suggested the women worked towards making articulate stories in line with the contested knowledge and that the blurring of understanding was due to new technologies and social practices. For the majority of the women, there was an underlying need for consistency and support in relation to making meaning around technology. This was understandable in consideration of the anxious nature of PCB. For some of the women, in particular those who were first time mothers, the combination of the unknowingness of PCB and the complete submission to body changes and functions during birth was problematic The need to counter these states and to have a sense of control was noted as important reason for framing technology as useful.

Consistency across practices can be understood in light of the relationship between the dominant biomedicine and risk discourse. Women appreciate the ability to control or read the body explicitly while under the care of medicine and medical tools in the context of risky pregnancy. Technology is therefore endowed with seductive qualities because it can reveal previously unknown qualities of the pregnancy, for example, to measure the foetal heart beat. Technology forms such as scans are constructed by women as a tool to make available the risky internal biological world for people to comprehend. Thus it can become more difficult to resist technology due to its ability to provide significant information. Consequently, technology as practiced for PCB becomes understood and accepted as routine and less likely to be questioned due to ongoing common practice.

Women actively move between discourses as they justify and alter their positions in relation to meaning. As new social and psychological processes such as consumerism are taken up, new ways of comprehending technology and more generally, PCB become available. Sometimes discourses are combined in order to

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strengthen particular approaches to technology. For example, risk discourse and biomedicalisation work together in terms of strengthening the understanding that technology is a positive choice for better medical health and psychological outcomes. These movements can be understood as reflective of individual and social change.

Overall, these selective constructions around the meaning of technology are due to women wanting to create meaning for various functions dependent on the individual context for each woman. For the majority of the women in the study, technology was considered as a route to stability and control in relation to their PCB healthcare.

Another key finding from the study indicated that the talk of the women positions them and other key people within PCB healthcare in certain ways. As a consequence of this positioning, people are subject to reproductions of power within a given relationship, dependent on the dominance of the discourse and the agents involved. For example, for the women in the study, within the context of western healthcare, medicalisation of themselves and their health was the most obvious consequence of drawing on medical discourse.

There are other people involved in the processes around making meaning of pregnancy technology and are therefore positioned to be influenced by PCB technology. This includes the unborn child, family; particularly the partner and mother of the woman, and the healthcare practitioners. The healthcare practitioner can come from a number of approaches, but the most common positions are biomedicine and alternative medicine. With these agents, the relationship can be contradictory, depending on the compatibility of the positioning of the woman and the view of their healthcare provider or other agent. In terms of hierarchies, experts within biomedicine have been privileged in the modern context. This was evident in the dominant positioning of experts and their discourse by the women in the study. In comparison alternative approaches that reject technology were readily dismissed by the women

Underlying all of the relationships were power relations that created subjectivities for the women. In particular, the dominance of biomedical discourse meant the women in the study relinquished their social, cultural and embodied knowledge, in favour of objective information provided by trusted professionals. However there was a variation in terms of what function these discourses represented for the women and for what purpose they engaged with the discourse. For example some women like Beth drew on biomedical discourse when accounting for their rejection of an amniocentesis test. By rejecting a medical test they were able to claim boundaries around how they constructed the identity of their pregnancy in relation to creeping medicalisation under the guise of technology practices, implying that women are not passive entities in regards to their negotiation of medicalisation. They were active in mediating different approaches as suited to their particular technological or social need. In line with the historical concern with biomedical hegemonic power, these women balanced the dominance of this discourse with other individual concerns..

The discourses were based within social and cultural norms at work within healthcare and society. For example visual information given during an ultra-scan procedure were judged by some women as a positive experience due to the immediacy of seeing the unborn child, with feedback about key health, social and cultural features of the child such as gender and anatomical correctness implying the child is in good health. This empirical information is part of the medical science tradition of valuing experiences that you can see in order to validate information and experience. Thus, women further favour medical discourse for not only the practical benefit, but as an artefact of broader dominant social views.

The dynamic nature of healthcare and the relationship between women and their healthcare was evident in the discursive practices of the women. They altered their positions as a consequence of the changing face of technology. As new information, healthcare incentives and technology became available, the women actively mediated their stance based on a complex nexus of social, moral and cultural factors.. These new approaches such as alternative medicine offered the

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women new ways of seeing technology, and therefore opportunities to resist, contemplate, or take up technology accordingly. These trends threaded through the talk and the discourses.

Consequently, within these relationships the women placed an emphasis to act as moral citizens in their role as the 'good mother'. Other subjectivities were manifested by the women when they spoke of themselves in dual forms. For example they spoke of roles and positions such as mother/herself, wife/herself, internal body/external world, medicine/natural that they must deconstruct as part of their subjective experience surrounding the conceptualisation of technology. The dichotomous nature meant there was conflict at times when co-ordinating competing discourses.

Different positions that are supported by discourses have the flow-on effect of mediating responsibilities or rights for the woman in relation to the impact of technology. For example many women in the study were concerned about screening for medical disorders due to the need to take responsibility in the event something was shown to be wrong. This position mediated their decision to take or reject the use of the technology. Consequently, the women perceived that there were social consequences for these practices. Those who had rejected technology for ideological reasons had to justify themselves strongly in comparison to those that took on privileged ways of viewing and using technology. The particular moral positioning of pregnant women as carriers of children meant they constructed themselves within wider social norms around pregnancy, and at the same time they had to negotiate their own needs within their particular social context. This can be conflicting and confusing. However the women in the study presented themselves as keen negotiators in regards to making sense of technology relative to their context. Even when they were in agreement with dominant advocates of technology there was considerable mediation of decisions around the use of it.

Pregnancy and PCB technology are obviously pivotal life choices for pregnant women and so they place a lot of effort in terms of coming to an understanding

and justification around their position and use of technology.

6.2 Limitations of the study

This study has explored the talk of ten pregnant women as a way of understanding how women make meaning of technology. It is important to recognise the changing context for these women in terms of considering how relevant the study is. As social and cultural norms evolve over time in line with technology and society change, then technology will be perceived differently as well. Consequently, due to the specific historical-social-cultural context of these women and women as a whole, the findings from the study concerning the meaning of technology are not and indeed cannot be definitive.

6.3 Future directions

As a consequence of the study, several recommendations in regards to future research and implications for pregnancy healthcare practice can be made.

6.3.1 Research

Progressive steps within health psychology towards acknowledging the role of the social context within health is critical. From the integrated nature of discursive movements by the women demonstrated in the findings, we should also be suspicious of pluralism currently evident in social research around the subjective/objectification of women. Furthermore there is a need to be aware of the role of subjective embodiment with pregnancy research due to the physical nature of pregnancy and subsequent framing of embodiment within PCB research from a social constructionist perspective.

Currently, academic work in the area of acknowledging the social context within health psychology is disjointed due in part to the divergent positions and

acknowledgements between critical health psychology and orthodox health psychology that draws from science and medicine. For health psychology to be able to reach its potential from a unique perspective, it needs to prevent the ongoing co-opting of psychological-sounding theorising into medical discourse, and lack of integration within the bio-psycho-social model. Cartesian viewpoints that have positioned psychology research to view health through a fragmented lens also need to be repealed in order to progress insight into the relationships between discourses from the structural to the micro level. A movement away from the medical model will also allow for the health psychology discipline to contribute in a truly social science tradition.

Further investigation into positive psychological models of health within pregnancy will allow for better informed education which draws on these resources. One theoretical outcome from the research is the need to acknowledge the role of situated knowledge and process. The relatively homozygous nature of the women within this study makes it problematic to be comparing their constructions to other women from different ethnicities, ages, education and socio-economic groups. I would strongly recommend research that honours differences in approaches to knowledge and situated influences in keeping with working towards equality and social justice for women.

I propose further research within key areas that the women expanded on but which I was unable to investigate due to the scope of the study. These include the role of social relationships and in particular the role of the father in PCB technology.

6.3.2 Implications for pregnancy healthcare practice

Lyon and Chamberlain (2006) identify the need for critical health psychology to develop practice out of research. The findings foster a need for PCB clinicians to engage with concerns around technology from a social perspective, in order to have a better understanding and therefore provision of care of pregnant women. Women, their health and their healthcare must be seen beyond a binary terms of

mother/woman and pregnancy/child in order to give weight to the complicated nature of pregnancy that the women, under the moral duress to act as good mothers, need to negotiate. Because of these contextualisation, the importance of comprehensive, reflective education and availability of suitable sources of information as attendant to the needs and perspectives of the woman is critical for aiding them in their understanding and practices around PCB and technology. The need to re-orientate pregnancy away from a pathological perspective is also encouraged for better social and psychological outcomes for pregnant women. In summary, outcomes from the study ask for practice re-orientation in regards to empowering pregnant women when utilising new technology, and encourages reflexive awareness of the impact of technology

6.4. Conclusion

In conclusion, this research study has revealed that the practices around making sense of technology carried with it consequences that affected the women's PCB healthcare, and beyond. Six discourses were identified from within the talk of the women in relation to the construction of meaning. These included risk, naturalism, biomedicine, good mother, morality and consumerism. The contested terrain of meaning around technology was also found to be diverse and complicated. Technology is not a neutral object and carries moral dilemmas for pregnant women to work through in the face of complications. Despite this, the women were overwhelmingly in support of using technology in spite of ethical, religious or pragmatic concerns around the effect of the technology. Use of technology is intrinsically understood to be part of being the good mother, and for the majority of the women, this need overrode any mediated concern. This speaks to the ideological depth of control biomedicine and science has in terms of influence over health and related practices, including technology. The social need to have healthy children in their role as a mother or wife within a family framed the women to believe that it is unnatural to not want to have children. Consequently, technology was framed positively as part of the quest to achieve these goals.

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Although technology was recognised by the women for material benefit, it was also recognised in terms of social and psychological cost for some women. Consequently, due to the growing acceptance of technology as normal medical practice in PCB healthcare, greater vigilance needs to be placed on sensitivity to the social, cultural and psychological effects.

To summarise, this study illuminates the need to be aware of the evergreen symbiotic relationship between biomedicine and society as it adapts to contemporary commercial interests, changing social norms, and technological forms. Specifically, for pregnant women, discursive practices around the adoption of technology and associated significant social and psychological constructs, such as identity formulisation, means it is of critical worth to further evaluate this relationship over time.

Once again, I would like to express my deepest gratitude to the women who shared their stories with me for this project. I hope through this thesis other women are able to benefit from your experiences.

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The meaning of biomedical technology within family healthcare
Information sheet

Thank you for taking the time to read this invitation. You have been invited to participate in this study run through Massey University. I am an independent researcher and in no way attached to your pregnancy healthcare provider. Your decision to participate or not participate will be kept anonymous and it will not affect your prenatal education or treatment in any way.

My name is Melanie Avery and I am a Masters student of Psychology at Massey University. As a researcher, I am interested in the changing nature of modern healthcare in terms of the developing use of technology and the role of the social climate within healthcare. For my Masters thesis, I am conducting research that investigates the meaning of using biomedical technology from the pregnant woman's perspective relative to her and her family's healthcare, across pregnancy, birth and beyond. Because of your position as a pregnant woman, I would like to invite you to take part in this research.

What does the research involve?

I would like to be able to interview people in order to explore what technology means to them. The interview will be audio taped. The audio data collected will be analysed and the findings will provide the basis of my Masters thesis and may be used for future published academic articles. All participants must be over the age of 18 years and must be able to speak and understand conversational English.

What will you have to do?

If you agree to take part in this research, you will participate in one face-to-face interview with me. I anticipate the interview will take no longer than an hour to an hour and a half. This discussion will take place either in a room at Massey University Psychology department in Palmerston North, or in your own home, at your discretion. Twenty dollars worth of petrol vouchers will be offered as compensation.

In preparation for the interview, I'd like you to think about what technology in biomedical healthcare has meant to you. I am particularly interested in technology relative to pregnancy, birth care and family healthcare. Examples of technology include genetic testing or therapy, vaccinations, intensive care units for premature babies, or the use of scans during pregnancy. What feelings, understandings and behaviour have come up for you when thinking about these and other technologies within your pregnancy and family healthcare? Are they relevant for you and your family? Would you use these technologies? Are they ethical choices? These questions will help provide the springboard for our talk.

What will happen with my interview data after the interview?

The audio tapes and transcribed interviews will be kept in a locked file over the research period and will be destroyed five years after the research is completed.

Participant risks, safety and rights:

I don't anticipate any risk when participating in this research other than the nature of the interview may possibly raise sensitive issues. However if any concerns arise we can stop and discuss how best to deal with them. You should be aware that I am not a health care professional and I do not have the expertise to advise you about technology issues. If you have concerns about anything, we can discuss and organise an appropriate referral for you.

You are under no obligation to accept this invitation to participate in the research. Should you do decide to take part, you have the following rights.

You can:

- ask any questions about the research at any time during participation
- withdraw from the research at any time.
- withdraw your permission to use your data up to one week after the interview.
- decline to discuss any particular topic and stop the interview at any time.
- request that the audio tape be turned off at any time during the interview;
- request a summary of the research and/or a copy of the transcribed interview on completion of the study.
- be assured that no information which could personally identify you will be used within any reports arising from this study.

Where to from now?

I hope you will consider taking part. If you would like to hear more about the research or think you might be interested in taking part, I can be contacted using the information below. I would appreciate if you are interested to please contact me within two weeks of receiving this invite to organise a time and place for the interview. My supervisor, Kerry Chamberlain is also available to answer any questions as well.

Many thanks for taking the time to read this information sheet.

Melanie Avery (principal researcher)

Professor Kerry Chamberlain (supervisor)
School of Psychology
Telephone: 09 414 0800 extension 41226
Email: k.chamberlain@massey.ac.nz

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Massey University
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The meaning of biomedical biotechnology within family healthcare

Consent Form

I have read the Information Sheet for this study, have had the opportunity to discuss what is involved, and my questions have been answered to my satisfaction. I understand that I may ask further questions at any time during the research process.

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

Name (printed full name) ...

....

Signature:...

Date:.................

If you wish to receive a summary of the overall (not individual) research project results and/or a copy of your transcribed interview, please indicate that here, and provide your contact details so I can send them to you.

What would you like to receive?

a summary of the findings	YES	NO
a transcribed copy of your interview?	YES	NO

By email: ....

By post:

....

....

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The meaning of biomedical technology within family healthcare

Topic based interview schedule

1) Descriptive questions: family dynamics/gender/age/culture?

2) Discuss the meaning of technology utilized within biomedical healthcare.

Relative to: Your healthcare
Your family and their health and healthcare
Your health and disease
Yourself
Pregnancy, birth and future healthcare
Future/current/past ideas around health and
healthcare
Relationship with biomedicine or other health
approaches (holistic etc)
As a new direction within healthcare

Look at social and psychological discourse in the form of answers around people's reactions, constructions, context, understanding, behaviour, thoughts or feelings.

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