Male engineers extending working life: issues in ongoing professional practice development

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This study initially aimed to address the research question of how the experiences and perceptions of professionals working relatively late in their lives might be reflecting contemporary debates in public policy and the academic literature. Instead, the inductive process of the inquiry led to a contribution that deepens understanding of the intellectual and emotional issues that inform the commitment to practice of mature engineers in the early twenty-first century.

The focus of this thesis is to explore experiences and issues of mature professional practice in later working life. In-depth research conversations took place with 34 male engineers aged 55 to 77 who were deeply attached to their careers as practitioners, both in organisational and self-employment. Traditionally recognised as a technical profession that is key to Australia’s social and economic future, large numbers of engineers are expected to retire from the labour force in the foreseeable future. However, despite the diverse disciplinary perspectives used to examine the processes of transitioning from late working life to retirement, there has been relatively little interest in exploring how individuals with high-level skills and knowledge make sense of the issues which emerge for them as they continue to work later in life in contemporary times. Research inviting older engineers of the baby boomer generation to describe their experiences of working late remains scarce.

A dominant argument in the initial literature review was that an ageing population places significant financial and social strain on younger generations. Other contemporary debates that are taking place nationally and globally include intergenerational equity; individual agency in the timing and pathways of employment and retirement; the affordability of long periods of retirement; and the impact of predicted skill shortages as the older workforce retires. The inductive and interpretive culture of inquiry used in this study opened up opportunities for the engineers to direct the conversation to their own particular areas of interest and concern.
Consistent with an inductive approach to data interpretation I engaged in two different readings of the data set from the interviews. The first reading of the texts was concerned with how the participants themselves described working life in late career and led to the detailing of six themes to reflect the engineers’ own words. The second reading involved exploring and constructing my own sense-making of their accounts, which I represent through four motifs that offer larger meanings to the experiences and perspectives that the engineers discussed in our interviews. A further key interpretive step entailed the development of several conceptual questions that guided the use of cross-disciplinary literatures to deepen understanding of the issues arising from the two readings. Those literatures helped to crystallise the nature of underlying dynamics and tensions for engineering practitioners in late career.

In summary, most participants spoke of hoping to extend their careers through opportunities for interesting and challenging work. A major conclusion is that the desire for ongoing development does not necessarily stop on reaching mature competence as a practitioner. The valuing of mature experience and practice wisdom presented another significant issue for the engineers, which was partly about having avenues to leave a legacy but also about strong concerns related to the deprofessionalising of engineering.

A key contribution of the thesis is to illuminate the dynamics and tensions of currently being a mature practitioner in the engineering profession. A further contribution is the use of concepts and theories from the cross-disciplinary fields of psychosocial human development, modern organisation, professional practice development and communities of practice to offer rich possibilities for enhanced understanding of mature practice. Together, these theories and concepts also point to the importance of creating continuing developmental opportunities to address the to-date unrecognised needs and potential contributions of mature practitioners in late career. While this thesis is concerned with mature engineers, it is hoped that it will suggest new insights that can be related to older practitioners trying to extend their working lives in a range of different professional settings in a rapidly changing world.
The opportunity to embark on a PhD has been a gift of learning that I greatly appreciate and there are many people to acknowledge and thank.

I would like to express my gratitude to the 34 engineers who volunteered to contribute to this study. They were generous with their time and their willingness to share their experiences and thinking about their professional lives. They also opened my eyes to the presence of engineering in nearly every aspect of daily life, most of which is taken for granted. The interest from Professionals Australia in the research and their assistance with recruitment publicity was important to the success of the project.

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To my partner, Syd, my heartfelt thanks for supporting me to make the most of the window of opportunity at this time of my life to spend four years researching and writing. Your patience, understanding, encouragement and practical support have been invaluable. To Andrew and Melinda, thanks yet again for readily sharing your lives with my studies. And Melinda, as a fellow researcher, I have appreciated your presence as an empathic conversation companion whose eyes did not glaze over after the opening minute of PhD talk.
DECLARATION

This thesis contains no material which has been accepted for the award to the candidate of any other degree or diploma, except where due reference is made in the text of the thesis.

To the best of my knowledge this thesis contains no material previously published or written by another person except where due reference is made in the text of the thesis.

Alison Herron

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CHAPTER ONE     INTRODUCTION: SETTING THE SCENE

It is a truth universally acknowledged, that population ageing requires older people to prolong their working life. With apologies to Jane Austen, that assertion was the starting point of my interest and curiosity about the late working life experiences and perceptions of older professional engineers. But my in-depth conversations with 34 engineers in later career and the inductive process of interpretation turned my focus onto issues associated with professional practice in later working life. The end point is a theoretical and practice contribution about mature professional practice and continuing development of engineers working later in their professional lives. That inductive process became the story of this thesis.

The study’s rationale and purpose

My interest in the phenomenon of later working life emerged from a swirl of discourses in the public sphere and academic literature about the importance of older workers extending their working life, which is often framed in terms of delaying their retirement. In a global context, population ageing is commonly depicted as a looming economic and social crisis with older people presenting a burden to national economies and to younger generations of taxpayers (Australian Human Rights Commission 2012; Beard et al. 2011; Commonwealth of Australia 2010; OECD 2006; Phillipson 2013b). Government policy-making in Australia, as in most countries, is increasingly focused on encouraging mature-age workers to remain in the workforce. Indeed, during 2014 when I conducted the research interviews, the Australian federal government announced its intention to raise the age for eligibility for the age pension to 70 years, which would function as an economic imperative to work longer. While this would not take effect until 2035, it sends a message about expected longevity in the labour force. Yet at the same time, research and anecdotal evidence points to many older workers being subject to age-based discrimination in their workplaces and in the labour market (Australian Human Rights Commission 2012, 2013, 2016; Australian Law Reform Commission 2013). This discrepancy intrigued me and I set out
to learn more about how individuals might be experiencing later working life in the current environment.

Baby boomers, born between 1946 and 1965, are the generation that now forms the bulk of the older workforce and those that are exiting to retirement. They have lived through major changes in the social construction of working life and retirement and are now confronting issues of the affordability of increased longevity and longer periods of retirement, greater diversity and contingency of working arrangements, as well as uncertainties about their future in a globalised economy. They are also living in a time when debates are prominent in the public arena and in academic literature about the economic and social consequences of ageing workforces and populations, the timing of retirement, the affordability of being retired as longevity increases and the attitudes of employers to older workers. Times and practices are changing. Research needs to follow the nature and impact of those changes on the latest generation of older workers.

While much of the literature addresses issues of retirement and the older workforce from systemic and organisational perspectives, some theorists recognise that the people who constitute the older workforce are diverse in their characteristics and are likely to be impacted differently by macro and meso level influences. More than 25 years ago, Sum and Fogg (1990) explained the relevance of responding to the heterogeneous nature of the older workforce and also the importance of updating our knowledge to reflect changing influences on experiences of working life:

Older workers are neither a homogeneous nor an unchanging pool of individuals. Demographic developments and changes in the labor force participation behaviour of key subgroups of this population have fundamentally altered their characteristics over the past few decades and will continue to do so over the remainder of this century. (p. 33)

And more recently Taylor et al. (2016) advocate that more needs to be understood about the experiences of older workers in their diversity as individuals. Research that attends to the complexity, diversity and nuances of individual lives can help to illuminate some of the detail in the bigger picture. Taylor and his colleagues also call
for a greater focus on the phenomenon of later working life itself rather than positioning older workers in the context of their retirement. Others too have highlighted that older workers’ decision-making about continuing to work is relatively underresearched compared with retirement decision-making (Templer, Armstrong-Stassen & Cattaneo 2010). This is a perspective I adopted in my research when I turned the spotlight on the reality of late working life as experienced and understood by older professionals.

My initial review of the literature revealed that little attention has been devoted to how professionals in the practice professions are experiencing and making sense of their later working lives. Yet, like their less skilled counterparts in the labour market, professionals are carving out their late career pathways in an era of liquid modernity, which has seen governments and industry create a complex world and then shift the responsibility to individuals for making choices and bearing associated risks (Bauman 2005). Flexible working arrangements, contract-based and self-employment are becoming increasingly common for professionals but little is known about how these impact on professional practice in later life.

Mature-age professionals can also be understood as possessing high-level skills and knowledge acquired during long careers and it would seem that retaining their intellectual capital would benefit the economy, the community and the individuals themselves who wish to continue working. But it was not clear to me from the literature whether in the contemporary world their expertise will continue to be used as a resource or end up on the scrapheap. Highlighting a specific profession for research attention would offer a more fine grained understanding of the experience of late working life.

Although my own professional background is in health and community services, I turned my focus to the technical professions as they perform a pivotal role in productive economic activity. Indeed, one predicted impact of population ageing is a shortage of technical professionals when large numbers of baby boomers retire from

With all this in mind, the initial aim of the study was to explore how the experiences and perceptions of mature-age technical professionals in the second decade of the twenty-first century might be reflecting the contemporary public policy debates and academic literature about longer working lives. The intent was to learn from individual professionals about how they perceive issues of working, extending working life and transitioning to the next stages of both work and life.

**Origins of my interest in the research**

My interest in the topic of late working life is another twist in the kaleidoscope of my professional career as a social worker practitioner. More than twenty years ago I started developing community programs with and for older people. Since then I have maintained a focus on how people can lead fulfilling lives unconstrained by negative and reductive ageist attitudes as they progress through their later years of adult life. This research provided me with the opportunity to understand more about the lived experience of later working life as a phase of life in itself and also as a phase that is likely to have a bearing on a person’s experience of retirement.

I was 59 at the time I interviewed the participants and so at a personal level I am researching a phase of life that has particular relevance to me and to my age peers, including my partner, my siblings and many friends and colleagues. Debates about baby boomers, age discrimination, working longer, affordable retirement and intergenerational dynamics hold interest for me personally as well as academically.

As part of my reflexivity about the research I also became aware that my philosophical approach was strongly influenced by my practitioner background as a social worker, which was somewhat of an oddity in a business faculty. I come from a profession that works closely with spoken words and the “white spaces” (Cherry 2010a, p. 9) of the unsaid; knowledge and meaning-making are created in interactions through conversation. Social work also views individuals as functioning in a wider world of
relationships and external social and political forces. From this perspective, people’s perceptions and experiences as well as their futures are at the intersection of many influences. My approach to the research is aligned with the way I have learnt as a social worker to understand the world around me. I have a deep interest in how life is experienced by individuals because it is people who are the living beings – not economies, societies or organisations.

My approach to the research and subsequent interpretations of the data may also have been influenced by other aspects of who I am and the experiences I have had in life. For instance, I am a female researcher interviewing male professionals, I have attempted self-employment as a practitioner and my partner’s profession is engineering with a career that shifted from organisational employment to self-employment. While this connection to engineering was not the driving reason for selecting engineers as the sample for my research, it is possible that at a less conscious level it exerted an influence.

Why professional engineers: the backdrop of an engineering story

Selection of engineers as target group for researching professionals

During the exploratory phase of my research, organisations representing engineers were highlighting in their publications and in the media that Australia faced a critical skill shortage of engineers. The shortage would be exacerbated by the imminent retirement of the engineers in the baby boomer cohort. Yet retrenchments of older engineers were still occurring, the environment for winning tenders for work was highly competitive and younger engineers were complaining in online forums (such as http://forums.whirlpool.net.au/forum-replies.cfm?t=1521527) about a job shortage and their difficulties in establishing their career. These mixed messages made the situation intriguing.

An avenue opened up for the research when Professionals Australia, the professional association and industrial union covering a range of technical professions, expressed
an interest to support the research so they could better understand how to meet the needs of their older members. To reduce the number of variables and external contexts influencing people’s perceptions of their experiences and work meaning, I decided to confine the target group to only one profession, namely engineering, which constitutes half the 25,000 membership of the association. The involvement of Professionals Australia in the research was limited to providing avenues of publicity for me to recruit engineers to be interviewed.

Engineers are recognised as a technical profession which is key to Australia’s social and economic future through their role in infrastructure, innovation and productivity (Kaspura 2014). Engineering is one of the longest-established professions and has diversified from its origins in military and civil engineering to more than 260 engineering disciplines or specialisations (Trevelyan 2014a). The following excerpt outlines the knowledge base and scope of the profession:

> The profession of engineering has always been about shaping and changing the world .... Following the Enlightenment and the Industrial Revolution engineering has been typified by the application of mathematics and the physical sciences to developing technology that addresses the needs of humanity in terms of inventing, designing, building, maintaining, improving and researching systems, machines, devices, processes, materials and products. In the last few decades it has increasingly expanded to include an understanding of relevant social and economic issues. (Higgs et al. 2016, pp. 126-127)

During the course of the research I became increasingly fascinated about the engineering profession itself, its history and its ongoing significance. Through what I learnt from the engineers who participated in this study, in conjunction with my ongoing reading and discussions with other engineers, I gained a greater respect for the contribution of the profession to the world we live in. This was not an outcome that I had anticipated.

My eyes were opened to how much my everyday life is influenced by the work of engineers. I have light and power at the flick of a switch. I cook meals on a gas stove. I have clean running water for drinking and washing. I rely on a safe sewerage system, stormwater drainage and garbage disposal processes to deal with waste. I travel on
trains and trams. I drive a car. I drive on roads and across bridges in a city of more than four million people. I can fly to the other side of the world in 24 hours. I use a computer to write my thesis. I communicate with people by mobile phone, landline, email and Internet. The food I eat, the refrigerator that stores my food safely, the manufactured products I use, the television I watch, the biomedical technology that could help keep me alive: the list of reliance on engineers is endless. Like many people, I take so much for granted. I had not stopped to think about the role of engineers in assuring my quality of life. And when there is a major natural disaster, engineers are critical to recovery and rebuilding. Yet the impact of professional engineers goes unnoticed and unremarked by the general public.

Older engineers constitute a group of professionals who have been buffeted by the winds of change over the course of their careers. They have worked against a backdrop of globalisation and dramatic restructuring of industries and organisations, cycles of booms and busts, corporatisation and increasingly flexible workforces, and also changing government policies that in previous decades encouraged older workers into early retirement and are now promoting extending working life.

While it would appear important to understand more about how the profession’s experienced and longest-serving members are engaging with late career and the phenomenon of extending working life, there is more attention being given to attracting entrants to the profession than to retaining its most experienced practitioners. For instance, a recent self-commissioned report by Pricewaterhouse Coopers (2015) argues the need for Australia to strengthen its science, technology, engineering and mathematics (STEM) workforce to be more competitive in global markets. Engineering was identified as one of the professions that would continue to be in demand. To “future-proof” the workforce with a sufficient number of professionals for jobs that require “high levels of social intelligence, technical ability and creative intelligence” (p. 12), the report advocates attracting young people to STEM education. However, the reports neglects to comment on the potential ongoing contribution of mature-age STEM professionals who are already highly skilled and experienced and who are interested to go on applying their expertise.
My study ended up shining a spotlight on a group of male engineers in later career who were deeply attached to their careers as practitioners and also exploring the importance of ongoing mature practice development. But the study also belongs to a bigger story of engineering, which is outlined in the next section.

**Glories of the past**

Engineering is a profession that has had an astonishing impact on the world. From early times of western civilisation, the Etruscans, Romans and Greeks were builders of bridges, aqueducts and fortifications, along with wastewater and sewerage systems. Some constructions are still evident and even in use today. Other civilisations have their own marvels of early engineering.

In Australia, engineers have been integral to European settlement and the nation’s subsequent infrastructure and technological development. Their work has had a profound and transformative impact on the Australian landscape, economic development, communications and daily life.

The second half of the nineteenth century in Australia coincided with the “age of the engineer” (Evans & West 2007, p. 152) and the rise of professional engineering from its skilled craft and master/apprentice origins to the application of mathematics and scientific knowledge (Carroll 1988; Harper 2016). After the early decades of European settlement in Australia and the building of much needed infrastructure for the new colony, the discovery of gold in the early 1850s brought economic prosperity to Australia and new demands for infrastructure to cater for the rapid increase in population and the requirements of those working on the goldfields (Harper 2016). Through these decades, engineers in Australia were adapting to major changes in technology.

Engineers contributed large-scale thinking and problem-solving to Australia’s development, with some engineers rising to public prominence as revered or controversial leaders of monumental feats of engineering. Two such world-renowned engineering achievements from the late nineteenth century are the Overland
Telegraph and the Goldfields Water Supply Scheme, led by engineers Charles Todd and C.Y. O’Connor respectively. The Overland Telegraph provided a key communications system that helped connect Australia within its own shores and with the rest of the world (Carroll 1988; Evans & West 2007; Johnston, Gostelow & Jones 1999). The Goldfields Water Supply Scheme was designed to supply water from the Perth Hills to the dry inland goldfield towns in Western Australia and later to provide irrigation for nearby agriculture. It is still in operation today. However, at the time of construction, the project was hugely controversial due to its sheer physical scale and associated cost to the public purse; under great pressure and criticism, O’Connor committed suicide before the project was finished (Carroll 1988; Evans & West 2007; Johnston et al. 1995).

The twentieth century brought new opportunities for engineering practice in Australia. Air and motor transport, telecommunications networks, manufacturing and mining industries, the introduction and widespread use of computer technology, along with the continuing development of infrastructure to meet the needs of a growing population, provided diverse challenges for engineers to apply their expertise and innovation skills (Carroll 1988; Johnston, Gostelow & Jones 1999; Lloyd 2008). Engineers were also responsible for the building of national and international icons such as Sydney Harbour Bridge and Sydney Opera House, both feats of engineering.

The Snowy Mountains Scheme, constructed over 25 years from 1949 to 1974, is Australia’s largest national infrastructure project (Carroll 1988; Evans & West 2007; Johnston, Gostelow & Jones 1999). William Hudson, a civil engineer, was in charge of the massive and innovative project from its inception until he retired in 1967 at age 71. In the year of his retirement, the project was heralded by the American Society of Civil Engineers as one of the seven civil engineering wonders of the modern world.

At the time that the Snowy Mountains Scheme was completed in 1974, the youngest engineers in my study were shortly to commence their engineering courses and the other participants had commenced study or were already in early to mid-career. One of the greatest feats of engineering was achieved in their living memory. However, the
1970s also brought an economic downturn which curtailed capital spending and impacted on engineers’ employment prospects.

The 1970s could also be considered to mark the end of Australia’s “Golden Age of Engineering”, a title that Florman (1994, p. 6) ascribes to the century from 1850 to 1950 in the United States, after which time he asserts that “engineering entered into a dark age of criticism and self-doubt”. Florman’s “Golden Age of Engineering”, and the Australian approximate equivalent, can also be understood in a broader economic context of an economic revolution that took place in the United States during the century following the end of the American Civil War (Gordon 2016). Gordon analyses “the special century” of 1870 to 1970 as a period of rapid growth and dramatic change in everyday life that will remain unique because “so many of its achievements could happen only once” (p. 1). In the space of 100 years, amazing inventions had dramatically extended life expectancy and transformed people’s experience of daily life, including the provision of electricity, gas, clean water, telephone, sewerage, refrigeration and television. Mainframe computers paved the way for personal computers and the Internet. These are not grand engineering constructions and schemes – and Gordon, a macroeconomist, does not acknowledge the role of engineering – but the introduction of each of these inventions is due to achievements of the engineering profession. He interprets that innovation since 1970 has been incremental, its effects less widespread than in the previous century, and the focus has been on entertainment, communication and information technology.

It is noteworthy that the engineers in my study started their careers as the heyday of engineering was coming to an end: a heyday that yielded a glorious history of spectacular achievements. And it is also evident that engineering is enmeshed with economics and politics because it entails the allocation of monetary, technical, human and physical resources (Johnston, Gostelow & Jones 1999). Hence engineers’ work inevitably extends beyond technical knowledge and judgement into the realm of politics and public opinion.
The shadow side of engineering

As with other professions, the story of the engineering profession’s societal contribution is not without criticism and controversy. Development on the scale seen in the past two centuries has benefited many: but at the expense of others. The 1970s in Australia was a time of social change and increasing awareness of the concept of environmental degradation. While the Snowy Mountains Scheme has been lauded for its engineering and economic achievements, it has also had damaging effects on the environment that are still being addressed today. The first stage of another hydro-electric scheme in Australia involved the flooding of Lake Pedder in Tasmania in 1972, which proceeded despite immense public outcry. It became a turning point in the demand for engineers to think beyond the technological and efficiency benefits and to become more accountable for the impacts of their work on the environment and communities (Carroll 1988; Johnston, Gostelow & Jones 1999). The environmental crisis has been identified as a factor in the demise of respect for engineers. Whereas they were once admired for their grand technological feats, they were subsequently seen as contributing to a monumental crisis. The paradox for engineers is that:

Engineers have developed transport to take humankind to the moon and back [although that knowledge has now been lost]; they have also given us the means for our own destruction.” (Johnston, Gostelow & Jones 1999, p. 82)

Some have argued that engineers merely applied the science that emerged from humans’ curiosity and search for new wonders, comforts and solutions and consequently are not morally responsible for the crisis (Florman 1994). The profession is now positioning itself to address sustainability and function as “part of the solution” (Johnston, Gostelow & Jones 1999, p. 553) and the profession’s current code of ethical conduct for practice stipulates both sustainability and the salience of community benefit:

As engineering practitioners, we use our knowledge and skills for the benefit of the community to create engineering solutions for a sustainable future. In doing so, we strive to serve the community ahead of other personal or sectional interests. (Engineers Australia 2010)
However, with the majority of the profession now employed in the private sector – often for large foreign-owned or multi-national companies – the business imperative to maximise profit for shareholders does not necessarily align with community benefit or with environmental sustainability. In such situations, employee engineers are likely to experience a conflict between their ongoing employment and the profession’s code of ethics (Johnston, Gostelow & Jones 1999). Globally, engineering remains a powerful profession and engineering-based enterprises are amongst the largest multinational companies in the world, often with engineers as the CEOs (Ignatius 2014). The scope of influence as well as remuneration and wealth of engineers varies greatly across the profession.

Another dimension of the shadow side of engineering is that the conventional telling of the history of engineering in Australia is a white man’s history, strongly reflecting the British colonial origins of Australia’s settlement and engineering background in an era of industrial revolution. The Institute of Engineers, Australia (now Engineers Australia) commemorated Australia’s 1988 bicentenary of European settlement by publishing a history of 200 years of engineering in Australia with a “focus on the achievements of some of Australia’s better known engineers and outstanding engineering projects, notably those that had a special role in our national development” (Carroll 1988, p. 291). It provides fascinating reading through its lens on technology solutions to the scoping of the problems associated with a rapidly increasing population, the quest to reduce isolation and the pursuit of wealth. Stories are told of a diverse range of engineering feats, but the tragic cost to Aboriginal communities and the damage to the environment receive little or no attention.

As a white man’s history, women are also missing from that bicentenary story. Female engineers do not rate a mention except in two sentences on the second last page to identify the need to attract women to the profession. Women appear in four photographs: two as homemakers to feature new post-war kitchen appliances, another is planting a tree and the last photograph in the book is of the publishing consultant and co-ordinator appointed by the Institution of Engineers, Australia. Engineering was indeed a male-dominated profession in 1988. Several years later,
Johnston et al. (1995, p. 26) draw attention to the historical exclusion of women from the engineering profession in their assertion that “The engineering profession and engineering training have been run by men, for men”. They proceed to hypothesise about the consequences of women’s long-time exclusion from the profession:

It would appear to be connected with the failure of the engineering profession, world-wide, to address the social effects of its activity. Another effect has probably been an emphasis on construction and conquest of nature, while problems of operation, maintenance and use of equipment have been relatively neglected. (Johnston et al. 1995, p. 27)

More recent workforce statistics show that headway has been made in increasing the representation of women (Kaspura 2015), but there is still a long way to go for gender balance in the profession. A report for the Australian Council of Engineering Deans acknowledges that “Engineering has been the slowest of all professional areas to shed its male image” (King 2008, p. 54) and that the education system and engineering workplaces continue to present challenges to women embarking on and progressing through careers as engineers.

The story of women’s low level of representation in the profession contributes an historical perspective to the lack of response from mature-age female engineers to the recruitment publicity for this study. This point is explored further in Chapter Three (Methodology) and again in Chapter Nine (Ways Forward).

**The struggle for recognition and a respected professional identity**

In an era that coincided with mid-career for the participants in the study, Lloyd (1991) wrote that engineering in Australia is a profession in continual transition. Over the decades from the late 1800s to the mid 1900s, engineers sought recognition as a high status profession and succeeded in winning a protracted industrial arbitration case in 1961 for higher pay rates commensurate with their qualifications and importance as a profession. Lloyd perceived the subsequent 20 years as the high point of professional identity.
Then came the era of ‘de-engineering’, which Lloyd (1991, p. 11) specifically defines as “the managerial approach whereby engineers are replaced in the management and leadership of professional engineering functions” (italics in original). Others use the term ‘de-engineering’ more broadly to refer to the loss of engineering expertise from organisations responsible for service provision:

Some organisations with major engineering responsibilities may no longer have enough experienced engineers to carry out their duties safely and effectively. In the light of the 200-year history of government dominance in engineering activity in Australia, this change is indeed dramatic. (Johnston et al. 1995, pp. 54-55)

Furthermore, the government is now reliant on the private sector to provide expertise that it formerly held, which has been claimed to jeopardise safety and adequate provision of services (Johnston, Gostelow & Jones 1999).

De-engineering was part of a broader political and economic ideological agenda to open up government enterprises to market competition (Lloyd 2008). According to Lloyd, this ideological agenda favoured a managerial approach that concerned itself with commercial objectives instead of engineering objectives and aimed to reduce the emphasis on large capital expenditure. The changes in the employment environment for engineers impacted on the nature of their work, their professional identity, their career paths and their job security:

Hitherto, engineers had seen themselves as builders of the nation, and providers of infrastructure services and industries. This was the way governments had seen them, up to the beginning of the 1980s. But after that, past accomplishments were taken for granted as politicians began to be deceived by false perceptions of engineers as big spenders always demanding capital for asset creation. The perception arose of a need to get engineers under control by displacing them from managerial roles and placing others in charge. (Lloyd 2008, p. 62)

One strategy that Lloyd (1991, 2008) identified for engineering to regain its influence was for engineers to shift from a traditional model of technical competence to a holistic model incorporating management and business skills and a responsibility for the effects of the end product. Leadership and communication skills needed to be part of their repertoire. In this framing of professional expertise, technical skills and
knowledge cannot exist in isolation from the wider range of skills that are needed in the contemporary world.

Over the decades that correspond to the careers of the engineers in this study, the engineering profession has been struggling with a sense of invisibility in Australia and in that space scientists are given the credit for the successes while engineers find themselves blamed for disasters (King 2008; Lloyd 1991; Trevelyan 2014a). A similar phenomenon has occurred in the United States (Florman 1994; Petroski 1990). Petroski relates that in the second half of the nineteenth century the American public revered engineers for their highly visible technological contributions to society. In the American context, he attributes the loss of positive image and lack of recognition to a number of factors, particularly the fragmentation of civil engineering into an ever increasing array of specialised disciplines, each with its own professional society, so that the emerging profession had no single representative voice. Another factor, inherent to the nature of the profession, is that engineers’ work rarely brings them into personal contact with the public, whereas professions such as medicine and law are enacted in the public domain. Additional factors include the requirement for physical labour of others to implement designs, the desire of politicians to take credit for engineering achievements and the apparent reticent personalities of many engineers. Elsewhere, Petroski is reported as describing the typical personality of engineers “as shy, and not very talkative, unless you’re discussing their latest project or some aspect of engineering that interests them” (Mraz 2009). To become more visible, he advocates that engineers capitalise on opportunities to tell their stories to reactivate the public imagination about the value of the profession.

Trevelyan (2014a) links the invisibility of engineers with the invisibility of engineering practice itself. The finished product might be visible but the human contribution of engineers is not. Nor is the process likely to be documented as historically the practice of engineering has been characterised by a “largely verbal culture and unwritten knowledge” (Trevelyan 2014a, p. 532). Hence engineering can be invisible even to engineers. They contribute to their own invisibility in other ways, which Trevelyan
(2014b) illustrates with a vignette of a national engineering photography competition and a video competition in which not one engineer is visible.

**Summary of the research design**

At the outset of this research I consulted a broad multi-disciplinary literature across systemic, organisational and individual perspectives. Following the initial literature review presented in Chapter Two, the central research question was posed as:

> How might the experiences and perceptions of professionals working relatively late in their lives be reflecting contemporary debates in public policy and the academic literature?

It was this question, along with the initial aim of discovering how these issues are made sense of by mature professionals in the second decade of the twenty-first century, that guided the design of the study.

To respond to this generative research question the study used an inductive and interpretive culture of inquiry that would allow the design to evolve in response to the content of the data and the iterative process of interpretation. I crafted a small number of open-ended generative questions for interviews with the engineers, which I provided to each of the participants a few days prior to the interview. A total of 34 male engineers aged 55 to 77 years volunteered to participate in the study, most of whom had responded to recruitment publicity distributed through an Australian professional association of engineers. There were no responses to the publicity from female engineers. Over a period of several months in 2014 I conducted an in-depth interview with each of the engineers. The conversational space created for the interview allowed the engineers to not only share their experiences and thinking, but also to take the conversation into their own particular areas of interest and concern. What turned up in those conversations drew the focus of the study away from the initial research question and into issues relating to their experiences and concerns as mature practitioners.
For the interpretive work of the inductive research design I engaged in two readings of the texts created from the interviews without reference to the literature. In the first reading of the transcripts I adopted the role of a curator to select and group the material into six themes that I hoped would do justice to their words at both individual and collective levels. I used the second reading of the themes and the texts to engage in my own sense-making. This process led to the construction of an interpretive framework of four motifs. These two steps of interpretation prompted a set of six core conceptual questions:

Question 1. What does it mean to be a mature engineering practitioner in later career?

Question 2. How do mature engineers struggle with and deal with the desire for continuing influence and impact in late career? In particular, how do they negotiate the terrain of their attachment to work when they perceive their status as a “veteran” is no longer valued in the modern organisation?

Question 3. What does it mean for professional practitioners if they not only doubt the future for their own practice but also believe that the future of the profession is being undermined?

Question 4. With the master-apprentice mode of knowledge transfer now outdated in most modern organisations, how could mature engineers cultivate elder roles and skills to pass on their practice wisdom to younger engineers and to their wider professional settings?

Question 5. How can continuing professional development be reimagined and revitalised for mature engineers in the later part of their careers?
Question 6. With these engineers’ dominant images of retirement as stagnant and unappealing, and phased employment, self-employment and volunteer work envisaged as a means to extend professional life, are there glimpses into how professionals with a strong attachment to their work might negotiate their way to a new phase of life?

Figure 2 on page 91 in Chapter Three provides a diagrammatic summary of the interpretive work of the methodology.

The six core conceptual questions guided further exploration of the literature for deeper insights and contributions to theory and practice. The first step involved considering these questions in light of the initial literature review and stimulated the articulation of a set of dynamics and tensions that concern engineers working in late career. The next interpretive step in the inductive process of the study was to seek out other fields of literature that could provide robust concepts and theories to hold, explain and deepen understanding of the dynamics and tensions that had emerged.

**Contributions of the thesis**

The overall contribution of this thesis is its exploration of the experiences of engineers working late in their lives of professional practice in the early twenty-first century. That exploration enriches understanding of the intellectual and emotional issues that arise for these professionals in the dynamics and tensions of their current commitment to practice and in their considerations of continuing their careers.

More specifically, the thesis offers an opportunity to learn from and build on the first-hand accounts of a group of male engineers who seemed very keen to talk about their experiences of working later in life and what matters to them as practising professionals. First-hand accounts of such experiences are relatively rare in the literature on working late in general, and in the literature on mature engineers in particular. In addition, the participants open a window into the experience and views of mature professional engineers who mostly belong to the baby boomer generation. The leading edge of this generation’s engagement with working late is of particular
interest because it is widely understood to have engaged with its social, economic, cultural and political context in distinctive ways. This is especially so since the baby boomer generation is the first to have extended lives and careers.

The inductive use of literatures helped to crystallise the nature of underlying dynamics and tensions that characterise mature engineering practice in an era when the contribution of engineering is being continually renegotiated. It also provided concepts and theories that would help to explain them, including psychosocial theories of individual development and concepts of modern organisation, communities of practice and practice development. Taken together, these theories and concepts also represent a distinctive contribution: they offer rich possibilities for further understanding mature practice and for creating continuing developmental opportunities for mature practitioners. Figure 9 on page 255 in Chapter Nine provides a visual representation of the contribution to knowledge offered by the lenses of these cross-disciplinary theories and concepts.

A major issue that emerged from the research is that professional development does not stop on reaching mature competence as a practitioner: mature practitioners continue to need and be interested in opportunities for further professional development. Ongoing professional development for those in later career is not about more of what is available to less experienced practitioners, but instead requires mapping of a new territory that pays attention to changed work meanings and roles, interests and challenges in extended careers.

In the light of these contributions, the study is positioned to be useful to practitioners as well as academics. For example, it could improve the capacity of professional associations to respond to the changing working world of the next generation, as well as to better understand the needs and interests of older members who continue to be committed to their professional practice. Indeed, this was the motivation for Professionals Australia to support the research by circulating the recruitment publicity through their communication channels to the engineering membership. Potential avenues of support that professional associations could pursue would include:
customised professional development opportunities for mature practitioners; improved structures and opportunities for mentoring programs; development of peer communities of practice; and access to information about volunteer opportunities for those in late career or retired from paid practice. It is worth noting here that the Professionals Australia restricted its assistance to recruitment publicity and did not seek to communicate with me on the progress of the study or to influence its direction or my recommendations.

The positive response of the participants to the inductive research design and in-depth interviews demonstrates that opening up conversational spaces to older professionals offers a fruitful approach for further research into mature practice and other topics of later working life. Involving veteran practitioners in consultation about ongoing practice development would also seem vital to creating relevant and meaningful programs and other opportunities for professional and personal growth.

As a personal reflection on the contribution that this thesis might make to the practice space, my experience of the research led me to a vision for a future where:

- older professionals are understood to be a resource – not a problem – so that their knowledge and wisdom can become a legacy of continuing contribution and not end up wasted on a scrapheap;

- all generations in the workplace are valued, recognised and respected for their contribution;

- opportunities are available for continuing growth and development as mature practitioners in their professional fields.
Overview of the thesis

The thesis is organised into nine chapters. A brief outline of each chapter is presented here.

Chapter One has set out the rationale for the study and why I became interested in exploring later working life from the perspective of individual professional engineers. I have outlined how the inductive research design allowed for a shift in the focus of the research in response to interpretation of the data set created in the conversational space of the interviews. I have set the scene for the selection of professional engineers for the sample by describing the historical context for the profession in Australia. The chapter also outlined the methodology and the theoretical and practice contributions of the study.

Chapter Two examines the literatures that informed my initial framing of the study about the topic of extending working life. This engagement with the literature explores a diversity of disciplinary perspectives on late working life, prolonging working life and transitions to retirement. To explore the key debates and the nature of the influences on older workers, I grouped the literatures into a multi-level framework of systemic (macro), organisational (meso) and individual (micro) perspectives. The influences were seen to be complex, interacting, overlapping, often contradictory and changing over the space of the decades of the late twentieth century to current times. The chapter ends with a discussion of the research opportunities that arose from exploration of the landscape of the literature and the subsequent refinement and focus of the study.

Chapter Three describes the methodological approach of the study. It begins with an explanation of the intent of the study, the changing focus of the study and the evolving inductive design. After discussing how other scholars have researched late working life from the perspective of the individual, the chapter moves into a detailed description of the research design, including the interpretivist culture of the inquiry, the creation of the sample of professional engineers and the development of the interview questions.
I then set out the constructivist rationale for the iterative process of interpretation involving two readings of the texts, followed by a description of the interpretive steps I took through each of the readings. The chapter concludes with an outline of the ethical issues and a critique of the strengths and weaknesses of the study.

Chapter Four presents the first reading of the texts that are the artefacts of the interview conversations with the participants. It reiterates discussion from the previous chapter about my role as curator in grouping and illuminating the words and vignettes of the engineers. This first interpretive reading is arranged into six themes that overlap and connect: changing meaning of work, future work intentions, being older in the workplace, passing on knowledge, ‘de-engineering’ as a changing context, and meaning of retirement.

Chapter Five and Chapter Six together hold the second interpretive reading and offer my sense-making of the words of the engineers and the six emergent themes of the previous chapter. I use a framework of four motifs to present and describe my conceptual analysis. The two motifs in Chapter Five are: being a mature engineer and becoming elders. In Chapter Six the other two motifs are: indignation and stepping off. At the end of each of the motifs I set out a number of conceptual questions that arose for me in the sense-making process and that suggested further avenues for inquiry. In total, I developed 16 conceptual questions that represent a bridge between the words of the engineers, my own sense-making and theoretical insights from the literature of later chapters.

Chapter Seven opens with an interim summary of the key debates in the literature, the emergent study design and the two interpretive readings as a preliminary to revisiting the concepts and theoretical frameworks from the literature review of Chapter Two. I then show how I distilled the 16 conceptual questions into a set of six core conceptual questions that guide the remainder of the thesis. The purpose of the chapter is to continue the interpretive work by drawing on insights from the initial literature review through the framework of the six guiding questions. The chapter concludes with a table summarising the dynamics and tensions of mature practice in late career that I
have identified from the two readings of the data set and the initial engagement with the literature.

Chapter Eight moves the focus to different literatures and theoretical frameworks that hold the potential to illuminate and explain the dynamics and tensions associated with mature practice and development that were summarised at the end of Chapter Seven. That literature provides concepts and theories that would help to explain them, including psychosocial theories of individual development and concepts of modern organisation, communities of practice and practice development. Taken together, these offered rich possibilities for further understanding mature practice and for creating continuing developmental opportunities for mature practitioners.

Chapter Nine takes up some of the possibilities and challenges that emerged through the theoretical work of Chapter Eight. I revisit the six conceptual questions for the practice implications of the research insights and offer recommendations that could open up new possibilities for mature professional practice development. I then outline some ideas for future research and reflect on the contributions that my research might make to the field. I conclude the thesis with a brief personal reflection on my experience of researching this group of engineers in later working life.

While this thesis is concerned with mature engineers, it is hoped that it will suggest new insights that can be related to older practitioners trying to extend their working lives in a range of different professional settings in a rapidly changing world.
CHAPTER TWO  THE LANDSCAPE: LITERATURE REVIEW

Introduction

When this project began, I was interested in how people working in the later years of their career actually engage with some key issues being discussed in contemporary public policy debates and academic literature. These issues include the likely economic and social impacts of ageing workforces and populations, the implications of being retired for much longer periods of time than previous generations, the ways in which working life might be productively prolonged, and the approaches that organisations will actually adopt to retaining or encouraging the exit of older workers from the workplace. I was particularly interested in how these issues are made sense of by people in technical professions such as engineering, given the historical importance of these professions to Australia’s infrastructure and productivity and the likelihood that large numbers will be retiring from the labour force over coming years.

The initial aim of the study, then, was to explore how the experiences and perceptions of mature technical professionals in the second decade of the twenty-first century might be reflecting these highly contemporary and emerging issues. I wondered how these professional practitioners regard their work at this time in their lives, and how they are thinking about stages when work will not be central. This was the framing that guided the initial focus and design of the study, including the literature review.

This chapter reviews the ways in which working in later life, prolonging working life and transitions to semi- or full retirement have been understood and theorised in the academic literature. These issues have attracted interest across a number of different disciplines. The chapter aims to capture the essence of what each of these perspectives offers to an understanding of the topic.

Since the 1980s the demographic phenomenon of population ageing and the associated structural ageing of workforces has received an ever-increasing amount of attention from researchers and governments around the world. In most literatures,
the phenomenon is presented as posing economic and social problems of significant – even crisis - proportions. Many disciplines are examining the ramifications and proposing solutions. Demographers, economists, sociologists, psychologists and gerontologists are amongst the disciplines contributing their perspectives to this significant field of research, policy making and personal decision-making.

Ageing has been typically cast as a problem, although the nature of the problem has oscillated from being a costly medical problem; a labour market over-supply problem requiring early retirement policies; then a looming skills crisis when the baby boomer cohort born between 1946 and 1965 creates a retirement exodus; and most recently an economic burden with consequential demands for increased labour force participation. Today’s older workers have felt the winds of change in government policies about retirement timing. From mid-career they were able to seriously consider the prospect of early retirement whilst over the past decade, particularly since the global financial crisis, the thrust of the public policy message has been to prolong working life. Another prominent discourse is the precariousness of people’s financial position in retirement due to both projected increases to longevity and the volatility of financial markets. As a result, older workers are at the centre of major changes in the social construction of working life and retirement and arguably have been the target of multiple – and often conflicting – discourses about their participation in the labour market.

To examine the landscape of the phenomena of late working life and transitions to other stages, including retirement, I have adopted a multi-level perspective similar to the approach taken by leading scholars including Wang and Shultz (2010), Beehr and Bennett (2007) and Szinovacz (2013). Indeed, Szinovacz (2013, p. 152) argues that a limitation of most theorising about later working life and retirement is “a single level of inquiry, be it society, employers, or individuals” without addressing the complexity of the issues involved. Following her classification of perspectives and contexts of retirement and Phillipson’s (2013a) similar classification for the social construction of ageing, the chapter groups the literatures at three levels of scale: firstly, macro level or
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socioeconomic perspectives; secondly, meso level or organisational perspectives; and thirdly, micro or individual perspectives. This chapter concludes with a discussion of the research opportunities that presented through this initial engagement with the literature. That discussion also describes how the literature review refined the initial framing of the study and how that translated into the design of the study.

In keeping with the inductive approach to working with theory, there was a significant period of the research project when I deliberately did not consult the literature, which obviously continued to evolve. In inductive studies, interpretive work that is grounded in data sets created through conversation with, or observation of, participants, requires a clear mind and a stepping away from the theories and predictions of others. However, I return to the literature in Chapters Seven and Eight for further understandings relevant to my own interpretation of the data set.

**Macro level perspectives**

**Economic perspectives**

The projected economic impact of population ageing, coupled with structural ageing of labour markets, is widely acknowledged as a critical challenge facing Australia and countries around the world (Australian Human Rights Commission 2012; Australian Law Reform Commission 2013; Beard et al. 2011; OECD 2006; Phillipson 2013b; Taylor 2007). The population bulge of the post-war baby boom cohort, now aged in their 50s and 60s, is portrayed as a looming mass exodus from the workforce into retirement. Baby boomers are assumed to present an impending economic burden for the public purse on the basis that they will require support to fund their retirement and a dependent old age after they exit from productive activity in the labour force. Viewed from this perspective of economic burden, retirement becomes a negative construct associated with the beginning of an ever increasing financial demand for scarce resources. And the most usually espoused solution is to extend working life, as encapsulated in the following excerpt:
There are good reasons for Australia’s decision-makers and law-makers to remove any impediments to the workforce participation of older workers. One motivating factor for governments is the projected costs of ageing to the economy. The Treasury’s *Intergenerational Report*, estimates that approximately $60 billion will be added to government spending by 2049-50. Two thirds of this amount is attributed to an ageing population, with predicted increases in Age Pension costs, health care and aged care.

Given the costs to the economy alone, it is clear that encouraging people to stay in the workforce for longer periods is now an important national priority. (Australian Human Rights Commission 2012, p. 4)

As the Australian Human Rights Commission (AHRC) highlights, the financial burden from the predicted wave of retirement represents a major concern to governments. Not only are governments around the world concerned about escalating demands for government-funded pensions and, as people age, increased health and support services, but also about the envisaged impact of a shrinking base of tax-paying younger workers required to fund government services and the increasing numbers of financially dependent older people (Australian Workforce and Productivity Agency 2013; Commonwealth of Australia 2010; Taylor 2008).

The burden discourse incorporates the notion of dependency ratios. Dependency ratios represent the proportion of the population aged 65 years and over to the working age population aged 15 to 64 (Australian Bureau of Statistics 2009). Based on an assumption that all economic productivity is performed by those aged 15 to 64 and that they are all contributing to the economy, while all people over 65 are dependent on the public purse, the dependency ratio in Australia has increased from 15 per cent in 1980 to 20 per cent in 2012 and is projected to be 36 per cent in 2050 (Chomik & Piggott 2012, p. 1).

One of the key demographic reasons for population ageing is improved longevity, which could be interpreted as a health triumph of the current era, with the potential to reap benefits from the human capital of an ageing population, as asserted in this construction:
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... older people embody a huge fount of experience and wisdom. Both firms and families rely on them for everything from keeping the pace [sic] at the workplace to instructing the younger generation in carrying out important tasks. (Bloom, Sousa-Poza & Sunde 2013, p. 2)

However, from the economic perspective – or “public accounting” perspective (Phillipson 2013a, p. 5) – the debate is dominated by discourses of increased longevity as a risk (Antolin 2007; Wills & Sherris 2010), a “peril” (Beard et al. 2011) or even a “tsunami” of retirees “outliving accumulated retirement savings and falling back on the Age Pension” (Actuaries Institute 2012, p. 9). The prevalent discourse through government and business is one of disquiet: baby boomers are financially underprepared to fund their own retirement (Australian Human Rights Commission 2012; Australian Institute of Management 2013; Westfield Wright 2012). In this construction, not only are people who are living longer endangering their own financial security, but also that of wider society.

Over recent decades, successive government in Australia – and in many other western countries - have adopted a neo-liberal or economic rationalist approach of adopting measures to reduce government expenditure on social welfare support (Encel 2008). The twenty-first century has brought a shift in fiscal responsibility for retirement income from institutions to individuals themselves (Phillipson 2013a). For example, defined contribution superannuation schemes have replaced defined benefit schemes, which has resulted in the transfer of financial risk and responsibility from governments and employers to individual workers (Adams & Rau 2011; Rafferty & Yu 2010; Sargent et al. 2013). Baby boomers are the age cohort caught between two retirement income support systems and many have not had sufficient years to build adequate superannuation balances (Asquith 2009). To dissuade people from early retirement and motivate them to extend their working life, governments around the world are raising eligibility ages for access to age pensions and superannuation entitlements (Chomik & Piggott 2012; McDonald 2011). In Australia the eligibility age for the age pension for women has been raised from 60 to 65 years to align with men’s eligibility. For both men and women the eligibility age will be raised to be 67 by 2023 and recommendations have been made for it to be further raised to 70 years by 2035.
Other economic factors are also affecting the timing of older workers’ retirement decisions. Australian studies into the effect of the global financial crisis (GFC) on the retirement intentions and experiences of older workers (Humpel et al. 2010; O’Loughlin, Humpel & Kendig 2010) indicate that older workers are delaying their expected exit from the workforce due to increased financial uncertainty and the need to recover from superannuation losses. For those who had already retired, many were considering returning to work, but their employment prospects were also affected by the fallout of the GFC. These studies point to a double jeopardy that can confront older workers and retirees: the vulnerability of their superannuation balances and retirement income streams to sudden financial market downturns and shrinking employment opportunities during periods of slower economic activity. This opens up a question of how much control individuals may actually have in determining whether to remain in (or return to) the workforce in later life (Szinovacz 2011).

The structural ageing of workforces in Australia and other developed countries is another dimension of the demographic phenomenon of population ageing that potentially impacts on economic activity. One of the projected problems of the structural ageing of the labour force is an eventual critical skills shortage when large numbers of baby boomers retire (Jorgensen & Taylor 2008; Kendig & Lucas 2013). The anticipated skills shortage is predicted to affect productivity and has implications for workforce planning at government and industry levels. It has been argued that if skilled workers extend their working lives, this will ameliorate the skills shortage and benefit productivity (Australian Workforce and Productivity Agency 2013). As noted earlier, increasing the level of workforce participation for older workers is the most commonly espoused and accepted solution to this dual problematisation of population ageing and the ageing workforce. Accordingly, in Australia, government policies have been and are being formulated to discourage retirement and prolong working life (Australian Human Rights Commission 2012; Chomik & Piggott 2012; Taylor 2010). These policies include raising the age of eligibility for the age pension and access to superannuation and tax concessions, and age discrimination protections. However, concerns have been raised about the damaging impact on some individual older
workers if they are forced to continue working until they are old enough to access the age pension:

In fact, lifting the eligibility age will create an imperative rather than an incentive for some people to remain in the labour market. (Australian Human Rights Commission 2012, p. 5)

The argument for extending working life is thought by some to be based on two debatable assumptions: firstly, that older workers are able to freely choose when to retire and secondly, that their decision-making is motivated only by financial factors, as in the following proposition of rational choice theory:

... the retirement decision is a result of comparing the financial resource accumulated and financial resource needed in retirement. Rationally, workers will retire only when they feel that their accumulated financial resources, as well as the forecast of future economic conditions, would allow them to support their consumption needs in retirement. (Wang & Shultz 2010, p. 175)

Public policy measures to increase labour force participation by older workers rely on financial incentives and disincentives but critics argue that these measures do not take into account that many workers do not have the opportunity to choose between continued engagement with the workforce or retirement. Retirement may be forced upon them for reasons of ill health and caring obligations, redundancy or inability to find work (Australian Bureau of Statistics 2016; Loretto & Vickerstaff 2013; Noone, O'Loughlin & Kendig 2013).

Other commentators point out that the careers of today's older workers have taken place during decades that have seen “continuous restructuring, outsourcing, and offshoring ... and the attendant downsizing and preferences for hiring part-time or contingent workers” (Hall & Mirvis 2013, p. 203). So while workforce participation by mature-age workers has been increasing in recent years, the historic lows of their workforce participation have been related to structural changes in industries and a drop in the demand for labour during economic recessions from the 1970s to early 1990s (Chomik & Piggott 2012; Phillipson 2013b). The 1960s and 1970s provided workers with the expectation of a standard retirement age (65 years for men and 60 years for women in Australia). The subsequent decades of the 1980s and 1990s were
accompanied by the phenomenon of ‘early retirement’ to encourage older workers out of the labour force to free up jobs for younger workers - or to hide the level of unemployment resulting from job losses following major industry and organisational restructures (Davies & Jenkins 2013; Phillipson 2011; Taylor 2011; Walter, Jackson & Felmingham 2008). Since the mid 1990s, when labour demand increased and population ageing came to the fore as a pending economic crisis, policies gradually shifted toward discouraging workers from early retirement and advocating longer working life for the sake of the economy, future generations and to self-fund their retirement years. However, employment opportunities have been unevenly spread and once unemployed, older workers are out of the workforce for longer than other age groups (Australian Bureau of Statistics 2010b).

And, as mentioned earlier, the retirement exodus of baby boomers has been predicted to result in a skills shortage in a shrinking labour force, which in turn could create greater demand for older workers (Patrickson & Ranzijn 2005). While there is a logic to this expectation, an alternative outcome forecast is that older workers will continue to struggle for employment when employers source cheaper skilled labour from the global market (Taylor 2010; Vickerstaff 2010). Moreover, while extending working life has received the greatest attention as a strategy to address the forecast economic problems of population ageing, other avenues have also been identified. Alternative potential solutions include investing in capital and productivity of a smaller workforce, increasing skilled migration and reforms to contain health costs (Chomik 2014b; Chomik & Piggott 2012).

As a final commentary on the complexities in play here, it has been contended that policy reforms to prolong working life do not always result in the outcomes intended. When Transition to Retirement (TTR) rules were introduced into superannuation regulations in Australia “to encourage workforce participation and to cater for more flexible workplace arrangements” (Australian Law Reform Commission 2013, p. 210), middle to higher income earners used the rules as a tax minimisation strategy to increase superannuation and to scale back their working hours, retiring at the same
age as they had intended (Australian Law Reform Commission 2013; Walter, Jackson & Felmingham 2008).

In summary, the dominant discourse of labour economics is that baby boomers signify a long-term financial burden to the economy, a burden that can be ameliorated by measures to extend their workforce participation and discourage early retirement. Baby boomers are problematised in the population ageing debate and individuals are increasingly expected to assume the responsibilities and risks for their ongoing personal financial viability in late working life and retirement. However, some commentators have challenged this perspective on the basis of global and local structural factors affecting the demand for labour, raising questions about whether there is enough work to match the policy solution of extending working lives. They point out that people are constrained – and motivated - by a range of both social and economic factors, responding to pressures and priorities in the context of their own lives and circumstances. Traditional economic analysis is not focused on the broader needs and concerns of individuals and it is to social policy perspectives that this review now turns to gain that broader perspective.

**Social policy perspectives**

Social policy perspectives consider the broader range of life and work issues that are involved in decision-making in later working life, as well as issues of intergenerational equity, intragenerational equity and age discrimination. These considerations acknowledge the complexity of the systemic environment and the contradictions and challenges that this poses for developing social policy settings and for the choices that individuals make. “Financial considerations, employment opportunities, life expectancy, alternative activities, and the desire to contribute all will play a part in their preference” (Patrickson & Ranzijn 2005, p. 733). Furthermore, older workers are experiencing a working world where local and global market forces are creating an uncertain future, with “a significant gap between the rhetoric of working later and the ability of policy-makers to intervene effectively on behalf of older workers” (Jorgensen & Taylor 2008, p. 20). For some, unemployment or other external factors may take
away opportunities to exercise personal preference, creating significant issues of social inequity. These sorts of considerations have led social policy theorists to contest the assumptions and directions of economic perspectives and policies.

As already noted, increasing the workforce participation of older workers is a key thrust of government policy responses to ameliorate the projected economic burden to younger generations of supporting the baby boomer generation through retirement and old age (Australian Law Reform Commission 2013; Marshall & Mueller 2002; Walker 1990). Applied to the funding of retirement, older generations are likewise expected to finance their own retirement (Actuaries Institute 2012, p. 10) to avoid creating a taxation burden for younger generations. In Australia, successive governments have released Intergenerational Reports (Commonwealth of Australia 2002, 2007, 2010, 2015) with a view to developing policies to address the potential negative impacts of population ageing, including the high debt levels that have been argued will fall to younger generations of workers and taxpayers. Interestingly, the Australian Law Reform Commission (ALRC) in its Review into Commonwealth legal barriers to older persons participating in the workforce or other productive work identified fairness as one of the key issues of intergenerational equity when it comes to “the management of public debt and the funding of pension schemes” (Australian Law Reform Commission 2013, p. 8). The report observed that:

Stability may be considered an important component of intergenerational equity, in which persons of working age support the retirement incomes of others because they anticipate similar support when they become older. (p. 66)

This position highlights the shift that today’s older workers have seen in their lifetime from an assumed intergenerational social contract to a focus on individual responsibility when the accumulating debt is considered too high and individuals are judged to be healthy enough and educated enough to care for themselves in their old age.

On the other side of the debate, some scholars have challenged the public discourse on intergenerational equity as unfairly blaming older people for the predicted economic debt that younger generations will incur. Kendig (2010, p. 145) responded to
the release of the Australian Government’s 2010 Intergenerational Report as coming “dangerously close to scape-goating older people for rising costs of government, many of which are not intrinsically related to ageing”. Rising health costs, for instance, will be incurred by the demands of all age groups but are attributed to the older population. Others query the neoliberal philosophy that places “the responsibility for remaining employed and employable ... onto aging individuals” (Laliberte Rudman 2013, p. 8), arguing that it prioritises concern for the assumed burden on younger generations over concern for the quality of life of the older population (Asquith 2009; Patrickson & Ranzijn 2005; Walker 1990). Asquith (2009) labels this shift in onus as “responsibilization” to reflect her understanding that provision of support to ensure the quality of the later years of people’s lives is devolving from state structures to the individual. These commentators argue that baby boomers are now being scapegoated for belonging to a large cohort, not saving sufficiently for retirement, living longer than previous generations, requiring costly health and welfare services, and placing an unfair tax burden on younger generations of workers. That the employment experiences of this age group have also been detrimentally affected by major structural changes in industries and workplaces is mostly ignored in the intergenerational equity debate.

Others note that older people are caught between conflicting sets of demands about their generational responsibilities in workforce participation. On the one hand, they are expected to continue working into later age to reduce the taxation burden on younger workers. On the other hand, there are demands for them to leave the workforce because they are taking jobs that should go to younger people (Taylor 2011; Walter, Jackson & Felmingham 2008). Policies and practices can treat the older workforce as an expendable labour market so that older workers are in demand in buoyant economic markets and marginalised when jobs are scarce (Laliberte Rudman 2013; Taylor 2010).

The notion that generations of workers are in competition for employment aligns with the ‘lump of labour’ theory, an economic theory ascribed to Henry Mayhew in his 1851 publication London Labour and the London Poor (Munnell & Wu 2012). The theory is
based on the assumption that workers are competing for a fixed supply of jobs, but the basis of the theory has since been shown to be a fallacy: not only are the employment prospects of both age groups affected by economic conditions, but there is evidence that youth employment can actually be higher when mature-age employment is higher (Chomik & Piggott 2012; Munnell & Wu 2012).

The burden discourse of population ageing also assumes that the intergenerational flow of support is from those of working age to older generations. However, this construction of the intergenerational relationship not only disregards the labour force participation of many older people, but also the finding that younger generations are the major beneficiary of transfers of money and practical support across generations (Kendig & Lucas 2013; National Seniors Productive Ageing Centre 2012). A recent study for National Seniors Australia estimated the annual productive worth of Australians aged 45 years and over through economic and social contributions to be $65.7 billion (Brooke 2015). An unintended social consequence of creating incentives to prolong participation in the paid workforce could be a reduction in the unpaid productive contribution made by older people through volunteering and their caregiver roles (Australian Law Reform Commission 2013; Loh & Kendig 2013). Unpaid caregiver roles encompass caring for grandchildren to enable parents to work, caring for dependent children including those with disabilities, and supporting aged parents. Such foregone productivity is rarely taken into account in the fiscal costing of population ageing.

Some social policy theorists argue that a discourse about intergenerational equity that places older and younger generations in competition with each other is not likely to be constructive socially or economically in the longer term. The phenomenon of intergenerational relations has been approached through a notion of “generational intelligence”, which involves letting go of the assumption that one’s own generation is more important than any other generation (Biggs, Haapala & Lowenstein 2011; Biggs & Lowenstein 2011). Capitalising on generational intelligence would have the potential to create greater solidarity and reciprocal benefit between generations.
Another strand to the social policy perspective is the removal of barriers to ongoing labour force participation, of which age-based discrimination practices is a major concern (Australian Human Rights Commission 2012, 2013, 2016; Australian Law Reform Commission 2013; Chomik & Piggott 2012). Here too, social policy theorists contend that these issues are more complex than initially meets the eye. While there is an important social equity case for removing barriers and discrimination that prevent older workers from fully engaging in the workforce, it has also been asserted that the purpose is not about equitable choices and the wellbeing of older people, but is instead clearing the pathway for obligating people to work longer, and in ways that they do not necessarily prefer (Vickerstaff 2010). For instance, flexible and contingent work can be experienced as precarious work or underemployment by older workers who are coerced into accepting part-time and contract work with a drop in pay rates and status because this is their only avenue to continue working (Westfield Wright 2012). Indeed, underemployment is a common experience for many older workers, with half of part-time workers aged 45-54 and more than 40% of those aged 55 and over preferring to work full time (Australian Bureau of Statistics 2012b). Hence while part-time work may be a preferred option for some in late career, there are still large numbers who desire full time work. These figures do not include older workers who are jobless, nor do they tell the story of those who withdraw from discouraging job searches and are then classified as retired.

Again, a contradictory dynamic has been identified in play here. Older people are being exhorted to continue working or to re-enter the workforce, supported by the stick of raising the eligibility age for the pension, and yet their age is a major handicap to obtaining secure work (Australian Human Rights Commission 2012, 2016). The dynamic shows up in the results of a survey conducted in Australia (Cameron & Denniss 2013), which revealed that for people aged 55 and over who were attempting to return to the workforce, age discrimination was the greatest barrier the respondents identified, followed by sickness (personal or family) and lack of jobs. The researchers concluded that for older age groups the major barriers to work are “the combined effects of a shrinking labour market and a culture of age bias in the workplace” (p. 36). This finding is supported by Australian Bureau of Statistics (ABS)
data that shows that unemployed older people remain unemployed for a longer duration than younger workers, with the main barrier to employment identified as ‘considered too old by employers’ and structural barriers of ‘no job vacancies in the locality or their line of work’ and ‘too many applicants for jobs’ (Australian Bureau of Statistics 2010a). A more recent survey, conducted in 2014-2015, found that the third most common reason that people aged 45 years and over had retired from the labour force came under the category of ‘retrenched/dismissed/no work available’ (Australian Bureau of Statistics 2016), which potentially reflects both age discrimination and structural changes in the labour market.

Ainsworth (2006, p. 316) points out the anomaly of ageist attitudes: “Ageism directed against the old is hostility towards a future self, not a clearly differentiated ‘other’”. She also theorises older workers as a cultural construction that manifests negative collective beliefs and damaging stereotypes about older adults in the labour market. The category of older workers can be understood as a fluid or relative concept that changes with gender, occupation and industry (p. 315), as well as policy or research context. Unlike the age range ascribed to the category of younger workers (often problematised in the context of youth unemployment), older workers can span many decades, depending on the definition being used and the context.

While the greater emphasis among social policy theorists is on intergenerational equity, intragenerational equity has also been identified as an issue. From this perspective, aggregating the experiences of the older population or the older workforce hides the disparities between the individuals who comprise the cohort. Opportunities and access to resources vary enormously across the cohort of baby boomers: gender, class, race, occupation, education and skill levels, health and disability can all affect the experience of late working life and retirement (Everingham, Warner-Smith & Byles 2007; Jorgensen & Taylor 2008; Kendig & Lucas 2013; Laliberte Rudman 2013). Some researchers assert that public policies aimed at older workers prolonging their working life, along with taking more responsibility for their income in retirement, are likely to be more beneficial to those already privileged by higher incomes and satisfying work (Asquith 2009). However, with the extent of global
restructuring of labour markets, others argue that even well-educated and highly skilled managers and professionals now face uncertainty in terms of employment (Bown-Wilson & Parry 2013; Lee et al. 2011).

This section has presented the sociological dimensions of increasing “responsibilization”, that is, the process of shifting the onus for providing support for retirement and old age from state structures to the individual. It has also presented the equity issues identified by social policy theorists as operating between generations and across the baby boomer generation itself. Their perspective challenges the economic views that place an expectation on baby boomers to continue working in order to fund their own retirement and not burden younger working generations. They contend that contemporary economic policy neglects the complexity of generational interdependence which sees transfers of money and practical support from older to younger generations, as well as overlooking other contributions made through caregiving and volunteering. They also argue that older people are caught between conflicting sets of demands about their generational responsibilities, being expected to continue working into later age to reduce the taxation burden on younger workers, and being accused of taking jobs that should go to younger people. At the same time, it is argued, older people are being forced to continue working or to re-enter the workforce by raising the eligibility age for the age pension, and yet their age is a major handicap to obtaining secure work. While the government thrust to remove barriers to working later in life can be lauded for removing discriminatory policies and practices, it has also been criticised for obligating older workers to remain in poor quality and low paid jobs and to experience long periods of unemployment as part of an expendable workforce.

**Meso level perspectives**

**Organisational perspectives**

The previous two perspectives have addressed the discourses and debates in the macro context. This section examines the literature that addresses the phenomena of
late working life, extending working life and creating opportunities for working in the meso context of organisational policies and human resource practices.

Individual organisations play an important role in determining the opportunities for older workers to remain in or return to the labour force:

Employers are key players in defining the opportunities for retirement as well as the opportunities for working longer. As a result, the success of policies aimed at delaying retirement is to a large extent dependent on the actions and attitudes of employers. Thus, to fully understand the process of retirement, one should delineate the role that employers play in the late career employment-retirement nexus. (Henkens & van Dalen 2013, p. 222)

It seems obvious that the factors that influence older workers’ decision-making about when to retire and the patterns of transitioning to retirement are closely linked to the factors that impact on their intentions to continue engagement with the workforce (Shultz & Olson 2013). Delaying retirement and extending working life are readily seen as representing two sides of the same coin and forming a “late career employment-retirement nexus”, to use Henkens and van Dalen’s (2013) term. If organisations influence both employees’ retirement patterns and their continuing employment intentions, with large numbers of employees approaching retirement age, it has been recommended that organisations need to be both proactive and strategic in determining whose services are important to retain and how best to achieve this (Australian Institute of Management 2013; Rau & Adams 2013; Zhan, Wang & Yao 2013).

In Australia, as in many other countries, the ageing profile of the workforce has raised concerns at an organisation level about the effects of a shrinking labour supply, an anticipated skill shortage and loss of experience and corporate knowledge when large numbers of baby boomers retire (Australian Workforce and Productivity Agency 2013; Jorgensen & Taylor 2008). The underlying assumption of many studies focused on the organisational perspective is that the predicted skill shortage will require a strategic response from organisations to retain their valued older staff (Oakman & Wells 2013; Shacklock & Brunetto 2011). However, employers facing skill shortages may pursue alternative options in preference to retaining their mature-age employees or
negotiating a pathway back into the organisation for retired employees. Rau and Adams (2013) recognise that organisations may make a strategic business decision to redesign, redistribute, outsource or off-shore jobs of those who have retired. They also make an important distinction between the strategic approaches of organisations that are seeking to retain skilled employees and the strategies of organisations that are focused on cost-cutting and downsizing, in which case older employees can be seen as surplus labour to be retrenched through retirement.

However, the literature identifies many challenges for organisations in developing strategic approaches in a changing and complex employment environment. Indeed, Shultz and Olsen (2013) contend that influence over the retirement process has shifted from organisations to individuals in recent times. With increased diversity of employment contracts, the demand for flexible work schedules, the range of timing and transition pathways to retirement, it has been argued that organisations will need to develop policies and practices that are responsive to the multiplicity of needs and interests of their late career employees if they wish to retain valuable intellectual capital (Flynn 2010; Paullin & Whetzel 2012). While proactive business approaches to retention and retirement planning have been identified by some researchers (Rau & Adams 2013), others express concern that human resources practices are not taking into account the preferences of their employees: “Management of retirement processes by employers that also address the preferences and needs of employees is mostly absent” (Henkens & van Dalen 2013, p. 224).

For organisations seeking to retain their valued older employees, a range of useful strategies might be needed to provide incentives for people to delay retirement and remain in the workplace, whether that be full-time or in a phased or contingent arrangement (Rau & Adams 2013). For example, adaptive job design strategies can assist older workers to continue to function effectively in the workplace, and flexible work arrangements can enable older employees to create a life balance to manage changes in health and energy, incorporate family caring roles and pursue leisure interests, instead of opting for full retirement (Brooke, Towns & Cherry 2013; Shultz & Olson 2013; Sterns & Sterns 2013). Promoting practices that enhance job satisfaction
can also increase employees’ motivation to extend their employment with an organisation (Oakman & Wells 2013; Paullin & Whetzel 2012; Shacklock & Brunetto 2011). While most of these organisational practices would also be beneficial to employees of any age, job satisfaction and other intrinsic factors appear to be of greater interest to higher skilled older workers in their decision-making to continue their employment (Millward & Brooke 2007; Wang & Shultz 2010).

Transitional or phased pathways from full-time employment to full retirement have received much attention in recent decades as a means of retaining older employees and encouraging longer working lives. Government policies are encouraging the business sector in Australia to offer phased retirement and other flexible working arrangements to better meet the needs of older workers, particularly to meet their family caring responsibilities (Australian Law Reform Commission 2013; Australian Workforce and Productivity Agency 2013). Quantitative studies in Australia indicate that older workers have a preference for gradually reducing their hours of work as part of their transition from full-time employment to retirement instead of an abrupt exit (Jackson & Walter 2010; Millward & Brooke 2007; Poehl & Cunningham 2011). Consistent with these studies of older workers’ preferences for more flexible working arrangements and phased retirement, an ABS survey (Australian Bureau of Statistics 2011) found that of those aged 45 years and over working full-time, 41 per cent intended to transition to part-time work before full retirement, with most intending to remain with their current employer. Intentions, however, do not necessarily equate with opportunities and actual outcomes.

While there can be mutual benefit to employees and employers in phased retirement, Henkens and van Dalen (2013) sound a cautionary note that some jobs and business environments are not suited to flexible and phased work arrangements. Furthermore, although older workers appear willing to consider postponing their retirement in response to policy incentives from employers and government, Walter, Jackson and Felmingham (2008) suggest that it is unclear whether intentions will translate into actual behaviour. Indeed, the timing and pattern of transition to retirement has been found to be influenced by a dynamic and complex interaction of factors in “an often
messy and disrupted process” (Loretto & Vickerstaff 2013, p. 65). Organisational influence becomes part of the mix, along with personal, family and wider economic contexts.

As well as human resource practices designed to retain the skill base of valued older employees through incentives to remain in full-time work or to transition gradually to retirement, organisations may also have opportunities to attract former employees back to their workforce after a period of retirement or to recruit other older workers who have retired (Rau & Adams 2013). The phenomenon of retirees returning to the workforce has been conceptualised as “unretirement” (Maestas 2010; Schlosser, Zinni & Armstrong-Stassen 2012) and post-retirement employment (Pleau & Shauman 2013). According to ABS data, the three major reasons for labour market re-entry after a period of retirement were ‘financial need’, ‘bored/needed something to do’, and ‘interesting opportunity came up’ (Australian Bureau of Statistics 2011). If employers wish to attract retired employees back to their workforce, it would appear to be important for them to understand the influences on these employees to “unretire”.

In their theorising about returning to work, Schlosser, Zinni, and Armstrong-Stassen (2012) posit that retirement is not a final career stage and that careers can continue through cyclical processes in and out of retirement. The fluid nature of the process suggests that the reversibility of retirement decisions not only calls for a recasting of career trajectories, but also calls into question the very notion of retirement as a life phase. If, as Maestas (2010) asserts from the results of her statistical analysis of longitudinal data from the US Health and Retirement Study, nearly 50 per cent of retirees have followed non-traditional paths of partial retirement or unretirement, then retirement does indeed present a complex and confusing picture in the current era. Furthermore, her study revealed that in most instances of unretirement, people had already anticipated that pathway prior to their initial retirement. The phenomenon of re-entering the workforce adds another dimension to understanding the messiness of work to retirement transitions and decision-making.
Other scholars have conceptualised employment after retirement as *bridge employment* (Doeringer 1990; Feldman 1994; Wang et al. 2008). As a concept, bridge employment positions changed working arrangements in late working life as an activity in retirement rather than as a shift in career pathway or change in the nature of work commitment. It can take the form of “full- or part-time work, full- or part-year jobs, a sequence of short jobs, or a single position of considerable duration” (Ruhm 1990, p. 31) often outside a person’s career occupation or industry. Some have extended the definition to include self-employment (Owen & Flynn 2004). Clearly, this concept encompasses a paradox of “working in retirement” (Kim & Feldman 2000, p. 1195). Indeed, the aptness of the “bridge” as a metaphor for working life after a full-time career may now be outdated or “a bit of a misnomer” (Rau & Adams 2013, p. 128). The metaphor implies a solid foundation for ‘work’ and ‘retirement’ at each end of a clearly defined transitional pathway. Hirsch (2009, p. 109) speculates that “older workers have a wide range of diverse needs and preferences, more complex than simply a desire for ‘bridge jobs’ in between career jobs and retirement”.

Much of the research to date on bridge employment has used an organisational lens for predicting which older workers will pursue particular pathways after a clearly defined retirement event, as well as conceptualising bridge employment as a strategy to retain valued older workers, albeit in different working arrangements (Wang et al. 2008). However, as individuals - by choice or necessity - are increasingly taking responsibility for their own later life employment and becoming more entrepreneurial as consultants, contractor and freelancers, their relationship with employing organisations changes with the employer increasingly becoming the client (Platman 2004). Zhan, Wang & Yao’s (2013) survey of highly educated recent retirees in China found that it is important for employers to adapt their policies and practices to flexibly respond to individual circumstances to retain those employees considered as critical assets. The finding that a diverse range of interacting factors impact on an individual’s decision-making supports the notion of retirement planning being a messy and individualised process. They recommended that further research should explore the complexity of the interrelationships between individual, organisational and macro level contextual factors.
This perspective assumes organisations are operating in an environment of an existing or imminent skill shortage and hence need to retain or recruit older workers. In times of economic downturn or major restructuring, however, this may not be the case (Szinovacz 2011; Taylor 2010), which has implications for those employees not considered to be valuable or part of talent retention. Such employees may find themselves “manage[d] out of the organisation” (Patrickson & Ranzijn 2005, p. 734), shifted out of full-time employment and phased into retirement via more flexible and precarious arrangements (Brooke, Towns & Cherry 2013) or targeted for retrenchment (Vickerstaff 2006a). Indeed, the discussion of the importance to organisations of retaining their talent mostly leaves unsaid that there are also older employees who are not valued and these workers may find they have little choice in their transition pathway to retirement. Their fate may well be represented in the ABS data on retirement (Australian Bureau of Statistics 2011) which show that ‘retrenched/dismissed/no work available’ is the third most common trigger for retirement after ‘reached retirement age/eligible for superannuation or pension’ and ‘own sickness, injury or disability’. As a further insight into the complexity of the landscape for older employees, Henkens and van Dalen (2013) argue that employers may be highly selective in choosing which staff to retain when their workforce has an abundance of older workers holding corporate memory. They further contend that employers appear to be making little effort to retain older workers “as long as they perceive alternative options to fill their vacancies” (p. 222).

Some commentators note that the end of mandatory retirement for most occupations and passage of other age discrimination legislation may not have had the intended effect of reducing barriers to the employment of older workers (Australian Human Rights Commission 2012; Poehl & Cunningham 2011; Taylor 2010). An Australian study commissioned by the Financial Services Council further found that age discrimination was still prevalent in many sectors due to the higher costs of older workers, a youth-oriented culture from younger managers and negative stereotyping of older people (Westfield Wright 2012). It has been argued that employers have incorporated other strategies to exclude older people from employment, for instance, disguising discrimination through euphemistic language that equates length of experience with
being overqualified or skills being outdated (Australian Institute of Management 2013; National Seniors Productive Ageing Centre 2011) or turning to the global labour market to address their employment needs (Jorgensen & Taylor 2008). As an overall assessment of the employer attitudes to employing older workers, Ekerdt (2010, p. 74) suggests from his survey of empirical evidence that “the turn toward an older worker-friendly labour market does not appear widespread”.

Another industry study found that the majority of employers believe that an ageing workforce will have a large impact on their organisation yet few are actively addressing the issue and instead are relying on government policy making to have an impact (Chandler Macleod 2013). In light of this finding, the report reinforced the argument that decisions concerning retention and retirement are made by organisations and employees, not by governments, so that organisations have a vital role to play in creating employment opportunities for older people and strategically addressing the implications of an ageing workforce.

This exploration of literature that takes an organisational perspective on late career employment and transition has revealed some contradictory arguments. One line of thinking centres on the importance of organisational strategies to manage a possible skill shortage as the baby boomer cohort retires from the labour force. Some scholars and commentators have recommended strategies and incentives to retain valued employees, that is, those with critical skills and corporate memory. However, others in the field dispute the assumption that employers will direct retention strategies toward their older employees and suggest that they may instead turn to other avenues to meet their workforce needs. Transitional pathways to retirement, along with bridge employment as a form of post-retirement work, have also received attention in the organisational context. On the one hand, such arrangements are viewed as mutually meeting the needs of employers and preferences of employees. On the other hand, doubt is cast over whether organisations will be amenable to providing these arrangements if the nature of the work required and the business environment are unsuited to more flexible work structures. There is also debate about whether the organisation or the individual has greater influence on the timing and decision-making
processes associated with working and transitioning to something other than full time employment. All of this suggests that there are many factors in play, and that the decision-making of both organisations and individuals is not easy to predict.

**Professional occupational perspectives**

Professional occupation is explored here as another example of a meso level perspective. The literature often conceptualises the older workforce as a single entity but, as already mentioned as an issue for intragenerational equity, such aggregation can conceal the considerable diversity of characteristics and experiences of individuals in the population. Occupation is a demographic characteristic that is likely to shape the experiences of late working life and the occupational grouping of professionals offers a further demographic refinement. Interestingly, occupational is regarded as an undertheorised perspective relative to the organisational perspective:

The scope of enquiry has tended to concentrate on organisational-level retirement pathways, while comparatively scant attention has been given to occupational career trajectories which promote or restrain exit from employment (Brooke 2009, p. 241).

Professionals constitute one of the broad demographic categories of occupation. As highly educated and skilled workers, many professionals have come to be considered as knowledge workers in a knowledge economy that has “a greater reliance on intellectual capabilities than on physical inputs or natural resources” (Powell & Snellman 2004, p. 199). In Australia, professionals represent a sizeable 21 per cent of the workforce (Australian Bureau of Statistics 2013). The proportion is similar for the older labour force of workers aged 55 years and over (Australian Bureau of Statistics 2010b), as well as for those working beyond 65 years of age (Australian Bureau of Statistics 2012a). It has also been claimed that the “most valuable asset of a 21st-century company (whether business or non-business) will be its knowledge workers and their productivity” (Drucker 1999, p. 79). In light of the perceived importance to the economy of professionals and knowledge workers, the exit of baby boomers with sought after skills necessary to economic growth has been identified as a concern to governments and industry (Australian Workforce and Productivity Agency 2013; Jorgensen & Taylor 2008) and one of the suggested policy responses is to encourage
these workers to delay their retirement (Jackson & Walter 2010). Indeed, on the basis that their work requires intellectual rather than physical capacities, some envisage that older professionals may well be able to contribute valuable expertise for many years beyond traditional retirement age (Patrickson & Ranzijn 2005).

In the literature, professionals are often perceived as privileged in terms of their employment opportunities and choices because their education, skills and knowledge are in demand (Davies & Jenkins 2013; Flynn 2010; Laliberte Rudman 2013; Loretto & Vickerstaff 2013). The framing of advantage and agency in the labour market has resulted in contradictory claims as to whether professionals are likely to delay their retirement or opt for early retirement. On the one hand, they may be more motivated to extend their working life because they enjoy their work more than do less skilled workers (Vickerstaff 2010), but on the other hand they may choose to retire early because of greater financial resources and security (Jackson & Walter 2010). Despite the theorising that paints an optimistic picture of opportunities for late career professionals to extend their working life, the reality may well be more complex.

Recent studies of older professionals and managers indicate that scenarios of skill shortages in the labour market may not be reflected in the experiences of professionals who have found themselves vulnerable to retrenchment and unemployment due to structural change and economic downturn (Bown-Wilson & Parry 2013; Gabriel, Gray & Goregaokar 2013; Lee et al. 2011; Mendenhall et al. 2008). As has been observed:

> No one may reasonably assume to be insured against the next round of ‘downsizing’, ‘streamlining’ or ‘rationalizing’, against erratic shifts of market demand and whimsical yet irresistible, indomitable pressure of ‘competitiveness’, ‘productivity’ and ‘effectiveness’. (Bauman 2000, p. 161)

Other studies have investigated the late career experiences of specific professional groups, including professionals with a Master of Business Administration (MBA) qualification (Post et al. 2013); medical and nursing professionals (Schofield et al. 2010; Schofield & Beard 2005); media freelancers (Platman 2004); school principals (Oplatka 2007); information technology professionals (Brooke 2009); and academics (Davies & Jenkins 2013; Shacklock 2008). The majority of these studies have focused on factors
affecting retirement timing and decision-making and the professionals in the samples were mostly full-time employees. Although the studies were generally concerned with retirement intentions from an organisational workforce planning perspective, they also revealed that many professionals retain a strong engagement with their careers and have intentions to pursue professional work opportunities after retirement – typically with their existing employer. A range of work-related factors affected intentions to continue in paid employment, including attachment to work, perception of autonomy, flexible arrangements, interpersonal relationships, and management and organisational influences (Shacklock 2008). Professionals with higher levels of expertise and networks were more likely to be able to negotiate ongoing work after formal retirement from their long-term employer (Davies & Jenkins 2013; Platman 2004).

At government policy levels, while there is recognition of intellectual capital for productivity generally, engineering and technology have been seen as being of particular importance. It is argued that “engineering and technology are critical factors in the long-term economic growth of modern industrial societies” (Office of the Chief Scientist 2013, p. 25). Concern has been raised about the implications of a long-term skill shortage in these fields with the predicted departure from the workforce of large numbers of retiring engineers and other technical professionals (Australian National Engineering Taskforce 2012; Jorgensen & Taylor 2008; Kaspura 2012, 2015). Although studies have investigated the challenges of attracting young people into education streams and careers in scientific and technical fields (Anlezark et al. 2008) and increasing the participation of women (Buse, Bilimoria & Perilli 2013; Deemer et al. 2013), to date there appears to have been little interest in investigating the late career experiences of professionals in technical fields, their transition pathways out of the workforce or ways of retaining their intellectual capital.

One of the few studies of older science and technical professionals is a qualitative study of 71 information technology professionals in small and medium-sized information technology (IT) companies in Australia (Brooke 2009). The late career opportunities of most IT professionals were considered to be severely constrained by
“the rapid pace of technological and company transformations” (p. 237) as well as ageist attitudes to their continuing employment. The resulting early exit from the workforce was framed as early retirement, although arguably, for some, the exit could be conceptualised as unemployment or underemployment in an industry where careers peak at relatively young ages. These older professionals, who were aged 51 to 60 years, reported feeling an expectation from both their employing companies and their social peers that they should retire but had a strong desire to continue working. The career trajectory of IT professionals was found to be insecure and discontinuous due to the project-based nature of the work and limited opportunities for long-term career progressions through an organisation. Flexibility in working arrangements in this context could be considered to be a euphemism for precarious employment in a rapidly changing industry.

Turning now to the profession of engineering, engineers represent a significant segment of occupational groupings for older age groups. Chomik (2014a) calculated that 29 per cent of the Australian population aged 65 years and over hold engineering qualifications and the proportion rises to 44 per cent for the older male population. Although this classification is broader than those currently working as professional engineers, the figures do indicate the importance of the sector to the labour market and to the economy. A scan of the literature showed, however, that there is a paucity of research both internationally and in Australia on the late career or retirement experiences of professional engineers, with greater interest in other aspects of engineering career development such as the need to attract young people to the profession, undergraduate education, early career experiences of graduates and increasing the participation of women in the profession. However, a small quantitative study in the United States that surveyed mature-aged engineers aged 55 to 70 years found that intrinsic factors relating to job satisfaction provided more motivation for older engineers to continue working than extrinsic factors (Lord 2002).

It is also possible to glean some further information about the retirement intentions of engineers from the Australian Survey of Retirement Attitudes and Motivations (ASRAM), a nationally representative survey of workers aged 40 to 59 years conducted
in 2006. The purpose of the survey was “to assess the extent to which older workers' retirement intentions and motivations are in line with, and likely to interact with, new government retirement policies designed to encourage later retirement” (Jackson & Walter 2010, p. 30). Analysis of engineers’ expected and preferred retirement ages found that their median preferred retirement age was 61.1 years while their expected retirement age was two years later at 63.3 years. However, as has been noted already, retirement intentions and actual behaviour do not necessarily coincide. Jackson and Walter concluded from the results of other studies that the actual retirement age typically falls between preferred and expected retirement ages. Many factors can lie outside an individual’s control in the case of job loss or ill health or a family member’s care needs. And few in 2006 would have predicted the impending global financial crisis (GFC) and its economic aftermath which disrupted employment paths of workers of all ages. Australian census data from 2006 and 2011 suggests that the GFC severely disrupted engineers’ employment overall and also led to an increase in the labour force participation rate for engineers over the age of 50 years (Kaspura 2015). Kaspura speculates that the early retirement patterns of engineers changed to compensate for lost retirement savings. But it is a complex picture because he also examined more recent ABS data and further speculated that subsequent falls in participation could have been due to older engineers deciding to retire from the workforce when the demand for labour contracted in 2012.

The literature shows that patterns of employment arrangements are changing for engineers as part of broader structural changes. The traditional career structure for professional engineers in Australia was embedded in large organisations, typically in the public sector (Lloyd 2008). However, engineering employment has shifted in recent decades from the public sector to the private sector, while the more intermittent and contingent nature of engineering work in the boom/bust cycles in infrastructure development has led to increasingly non-standard employment, including self-employment (Kaspura 2015). In contrast to the notion of permanent full-time employment as the standard working arrangement, non-standard employment has been defined as employment through labour hire or employment agencies and
independent contracting (Watson et al. 2003), and as temporary, part-time and solo self-employment (Hipp, Bernhardt & Allmendinger 2015).

Self-employment is represented in the literature as a way of professionals creating more flexible working arrangements and extending their working life. In Australia, 20 per cent of late career professionals aged 55 and over are self-employed, which is approximately double the rate of the younger professional workforce (Australian Bureau of Statistics 2010b). These flexible pathways include consulting and freelancing, as well as the more contemporary concepts of portfolio and protean careers, boundaryless careers, kaleidoscope careers, entrepreneurial ventures and encore careers (Hall & Mirvis 2013; Inkson 2004; Platman 2003; Simpson, Richardson & Zorn 2012; Sullivan & Baruch 2009). Many of these scholars also highlight the mixed experiences and meanings of professionals engaging in such idealised framings of flexible and autonomous work. For older professionals in these contemporary arrangements they may be reaping the benefits of a portfolio or encore career, encountering the difficulties of precarious work or negotiating their way in a more ambiguous environment.

Platman (2004) challenges the promotion of entrepreneurial flexible employment as being a policy solution for extending working life. From her interviews with 14 media freelancers aged 50 years and over, she found that the many risks and uncertainties in this entrepreneurial career construction overwhelmed the benefits. Autonomy and flexibility certainly had their attractions for the older freelancers interviewed and their “flexibility, affordability and ‘instant’ knowledge” (p. 580) made them a useful labour market for organisations. However, their working lives also entailed stressful levels of work to meet demands and deadlines of clients, adaptation to a constantly changing market-place, uncertainty about having sufficient work in the future, charging fees that did not adequately reflect their high level of skill and expertise, diminishing networks, difficulty in keeping skills up to date, and loss of the benefit entitlements of permanent employment. Extension of their working lives through this form of employment came at a cost.
Gabriel, Gray and Goregaokar (2013) have also questioned the assumption that flexibility is beneficial to professionals in later career. Their qualitative longitudinal study of unemployed managers and professionals following retrenchment in mid to late career in the United Kingdom concluded that flexibility usually carried the meaning of downgrading employment expectations and accepting a variety of lower skilled, lower paid and less secure forms of work. While flexibility might be promoted as the mantra of the modern labour market, the authors challenge that discourse because they interpret the arrangement as part of a shift of onus for employment and unemployment onto the individual, which ignores the influence of institutional and structural factors. They offer this perspective on the dilemma facing highly skilled professionals in the current climate:

When all is said and done, when CVs have been re-written, interview skills honed and selves reinvented, there are only so many jobs to go around and so many new enterprises to be started. (Gabriel, Gray & Goregaokar 2013, pp. 69-70)

This strand of the meso perspective has shown professionals to constitute a sizeable segment of the older workforce, yet relative to the attention to the older workforce as a whole, their experiences of late working life and transitioning to retirement appear underexplored and undertheorised. The potential for most older professionals to extend their working life is debated, with some commentators claiming they are advantaged in a labour market that is facing a skills shortage, whereas others contend that even highly skilled professionals have had their working lives disrupted by economic downturns, organisational restructures and age-averse work cultures. The perspective has also highlighted that work and retirement intentions of older engineers, like other science and technical professionals, have received little research attention although there is a strong argument that the skills and knowledge of their professions are vital to future economic productivity. The picture is also ambiguous as to whether engineers are more likely to retire earlier than other occupations because of greater opportunities for financial security or whether they will seek to continue working because of higher job satisfaction or to protect their retirement nest eggs from financial market collapses. In an era of increased flexibility and individualised career pathways that have brought an array of non-standard working arrangements,
self-employment has been investigated as a way for professionals to extend their career with varying assessments regarding the outcomes for older professionals. While flexibility and autonomy have been identified as benefits of self-employment, some argue that flexibility can also entail risk and uncertainty and may be of more benefit to organisations than to the individual.

**Micro level perspectives**

*An individual’s experience*

This perspective focuses on the retirement and transition literature at the level of the individual experience. Individuals in late career can be understood to be positioned at an intersection of multiple discourses and their awareness, interpretation and responses to these mixed messages are likely to impact on the directions they take in their lives.

In their extensive review of key empirical studies in the past 20 years, Wang and Shultz (2010) identified several key individual factors that influence decisions about trying to extend employment or transition to retirement: needs and values; personality; knowledge, skills and abilities; attitudes toward retirement; and health and financial circumstances. Shultz and Olson (2013) identified demographic characteristics including age, gender, social class, race, income level and health as being associated with individual decision-making. Unsurprisingly, being older and being in poor health have been found to increase the likelihood that a person will retire. Wang and Shultz also suggest that highly educated individuals may have more opportunities to continue working, including in consulting and entrepreneurial roles. They further point to the complexity of decision-making in terms of financial factors, arguing that financial security has been found to be an important predictor of decisions to retire, yet those with a strong attachment to their work and organisations may continue to work for motivations other than financial gain.

How all these variables come together in the enactment of individual behaviour is another matter entirely. What is striking about nearly all of the literature reviewed in
this chapter so far is that the idiosyncratic nature of individual experiences and the actual decision-making of individuals about extending working life has received only limited attention in the literature (Jex & Grosch 2013; Winkelmann-Gleed 2011). Winkelmann-Gleed’s own UK-based qualitative study illuminated the complex and highly diverse nature of older employees’ experiences and decisions as they juggle an array of interacting influences and identities. Instead, the literature has studied and/or theorised about particular variables in isolation from others. For example, the dynamic and complex interplay of factors in retirement decision-making has been expressed in research literature as ‘push and pull’ factors (Phillipson 2009; Pleau & Shauman 2013; Schlosser, Zinni & Armstrong-Stassen 2012). Push factors refer to negative factors that propel people out of the workforce into retirement, such as “poor health, organisational factors and work fatigue” (Oakman & Wells 2013, p. 992), while pull factors are those that draw them towards retirement, including outside work interests, partner’s retirement status, and caring responsibilities.

It has been argued that much of the literature is based explicitly or implicitly on rational choice theory: the assumption that an individual makes conscious and systematic decisions about their pathways through late working life and into retirement, and exercises high levels of personal agency in acting on those choices (Wang & Shultz 2010). While choice and mastery have been identified from Australian quantitative and mixed methods studies as being critical to people’s wellbeing in retirement (Donaldson, Earl & Muratore 2010; Quine et al. 2007), some people who have retired report that they have been pressured to retire or lacked any control over the timing of their retirement (Noone, O'Loughlin & Kendig 2013).

The whole notion of rational decision-making in this context has been challenged by Jex and Grosch (2013, p. 275) who define ‘rational’ as meaning “people will attempt to make decisions in such a way that they will maximize their long-term outcomes while minimizing their costs”, a definition that reflects a dominant economic discourse for conceptualising retirement behaviour. They suggest that many of people’s retirement decisions would not appear as rational in this meaning, providing examples in terms of people’s financial and health planning – or lack of. Such theorising is judged to be
irrational from the perspective of the outsider but they argue that if more was understood from the individual’s point of view as to how they negotiate the myriad of complex and interacting variables, then what at first appears to be irrational could indeed be reasonable. In line with this thinking they suggest that “individuals with a high level of work centrality probably tend to stay in the workforce longer regardless of whether they have the financial resources to retire” (p. 278). And two recent qualitative studies (Bown-Wilson & Parry 2013; Loretto & Vickerstaff 2013) point to the complex and messy interaction of influences in the lived spaces of work, home and family on an individual’s decision-making in late career and the transition to retirement.

Life course theory is a perspective that does provide a way of thinking about and examining the experiences of individuals in late working life and retirement. This theory sees an individual’s life course as progressing through three linear stages: firstly education, then work and family, and lastly retirement or rest (Best 1980; Marshall & Mueller 2002; Settersten & Mayer 1997), with transition occurring when there is a period of overlap or adjustment between the major stages. Over the previous century, the traditional passage from work to retirement is considered to have been a clear cut event, usually at the age that signified eligibility for government pensions. It is now understood by many scholars that the life course is becoming much less predictable (Vickerstaff 2006b; Wang & Shultz 2010). The passage from work to retirement has come to be interpreted as an individualised and dynamic process with blurred boundaries between the two life stages (Lee et al. 2011; Phillipson 2013b; Sargent et al. 2013).

Ekerdt, Kosloski and DeViney (2000, p. 4) have drawn an interesting comparison between the economic perspective of rational decision-making theories and the life course perspective. The former they describe as “economic models of retirement behaviour that assume planful actors who routinely recalculate their optimal exit timing based on updated information and expectations”, whereas “the life-course view assumes that workers foresee retirement as a future, normative transition toward which they age”. Ekerdt et al. (2001, p. 162) have further challenged the assumed
planfulness of older workers in their analysis of the large scale US Health and Retirement Study, concluding that:

Uncertainty is an authentic, meaningful stance toward retirement that theory and research design should not ignore. Just as actual transitions to retirement can be ambiguous or blurred, the expectation of retirement, as well, can be untidy.

A number of other perspectives frame individual lives and careers as requiring more emergent, flexible or complex dimensions of understanding. For example, Bauman’s work (2000, 2007) has drawn a picture of contemporary life courses as complex and unpredictable. Bauman argues that in this most recent phase of modernity the shift of power from the State to global market forces and multinational companies has left individuals to function in highly complex, uncertain and unpredictable environments, assuming responsibility for the inherent risks in their choices.

Studies in recent years have also identified gender as a factor that can bring differing experiences of late working life and retirement (August 2011; Loretto & Vickerstaff 2013; Pleau 2010; Szinovacz & Deviney 2000). Mature-age women’s participation rates in the labour force have increased steadily (Australian Bureau of Statistics 2010b; Chomik & Piggott 2012) and their differing patterns of participation over the life course have been found to impact on the timing of retirement, reasons for exiting the workforce and working arrangements in late career (Bown-Wilson & Parry 2013; Sargent et al. 2013). For example, in a study of 57 couples, mostly in low and middle income brackets, Loretto and Vickerstaff (2013) identified that the women in their sample were, in the main, motivated to continue working for social reasons and job satisfaction, whereas financial reasons were more likely to underpin men’s decision-making.

Theories of late career and retirement trajectories have typically been gender-blind and assumed to equate to the male experience but this is now being challenged in new conceptualisations (Brooke, Towns & Cherry 2013; Byles et al. 2013). Everingham, Warner-Smith and Byles (2007) have proposed three models of retirement to reflect women’s experiences of late working life and retirement. The qualitative data were
collected from two cohorts of Australian women aged 53-58 and 65-70 years about their experiences and expectations of transitioning to retirement. The first retirement model of a ‘gateway’ corresponds to the traditional male version of retirement as an end to working life; the second ‘transitional’ model reflects a gradual downshifting from work to retirement; and the third model of retirement is a ‘transformative’ model of renewal in which the nature of work is reinvented to suit a new phase of life. In the transformative model the boundaries between work and non-work are blurred and notions of flexibility, autonomy and choice are promoted. A ‘retirement dependent’ model was also suggested to represent those who have little choice but to be dependent on government or families for support.

Sargent et al. (2013) suggest another model of retirement which is similar to the ‘transitional’ model and draws upon the blended life course experiences of women who move in and out of the labour force in differing patterns in response to family life stages. Their model, which is not gender-specific, reinvents retirement beyond a delineated life stage to incorporate new patterns of working life across the life course that interweave with other interests and obligations in people’s lives.

These contemporary conceptualisations point to a de-standardised and individualised life course and diverse retirement trajectories. Individuals in the current era appear to be confronted with a changing landscape for the life course and blurring of boundaries between work and retirement. But others argue that retirement is still embedded as a life course stage in older workers’ expectations of their future, even though they may follow their own “personal timetables for retirement” (Ekerdt, Kosloski & DeViney 2000, p. 19). There is, however, general agreement in the literature that retirement, understood from an individual perspective, can now be theorised as a process rather than an event (Shultz & Olson 2013). And according to Phillipson (2013b, p. 146), that process is “a ‘messy’ and complex [one], reflecting variables such as individual characteristics, household circumstances, career stage and prevailing labour market conditions” with individual lives embedded in “sociological and institutional contexts”.

Recognition of the complexity and messiness inherent in this landscape have led to efforts to re-define the social construction of retirement. Sargent et al. (2013, p. 1) offer this definition: “Retirement involves a set of institutional arrangements combined with socio-cultural meanings to sustain a distinct retirement phase in life course and career pathways” which incorporates the multi-level perspectives highlighted in this literature review while recognising the potential complexity of meanings and pathways that individuals may be negotiating in later life.

The ambiguity of retirement as a construct is also evident in the extensive analysis by Denton and Spencer (2009) of quantitative studies conducted between 1982 and 2007. They identified the range of definitions and measures of retirement used across that 25 year period. The range of retirement indicators included: non-participation in the labour force, reduction in hours worked and/or earnings, receipt of retirement income, no main employer, change of career or employment later in life, self-assessment of status as ‘retired’, or a combination of these. Each of these operational definitions had inherent advantages and disadvantages and the choice of measures was also affected by whether the study was investigating individuals, organisations or the macro systems.

To complicate matters further, many research studies in the field do not explicitly define retirement at all. The ambiguity of the construct is argued to entail a challenge to scholars in framing their research and also in interpreting the findings of others’ research that may or may not be comparable. Denton and Spencer (2009, p. 63) concluded that:

> The confusing array of definitions reflects the practical problem that underlies the concept of retirement: It is an essentially negative notion, a notion of what people are not doing – namely, that they are not working.

The problem is that the notion of ‘not working’ is no longer definitive. In their empirical study, McNamara et al. (2013, p. 129) found that “a substantial minority of those who were working in retirement worked more than 45 hr per week”. Both empirically and conceptually researchers have been challenged by the contradiction of individuals ‘working in retirement’, resulting in the notions of bridge employment,
“unretirement” (Maestas 2010) and post-retirement employment (Pleau & Shauman 2013). An inherent assumption in most research about older workers is that retirement is the ultimate outcome, but for an individual this may not be the focus of their thinking during late career, particularly for those who consider that they will never retire (Australian Bureau of Statistics 2011; Barclays Wealth & Ledbury Research 2010; Millward & Brooke 2007; Walter, Jackson & Felmingham 2008), which also has implications for theorising the contemporary adult life course.

The difficulty of determining whether individuals who are transitioning to retirement are working or retired was highlighted by Lee et al. (2011) in their qualitative study of the late career and retirement experiences and pathways of a sample of Canadian senior managers and executives. Their classification allowed for the participants’ subjective assessment of their status as working or retired and the authors interpreted the classification dilemma as: “a reflection of changing late career and retirement aspirations and experiences among Baby Boomer managers” (p. 4). Indeed, the diversity of meanings that the respondents attributed to retirement was a fascinating outcome of the study. The meanings were categorised into four types: “exploring new horizons”, “searching for meaning”, “contributing on your own terms” and “putting your feet up”.

The meaning of retirement to individuals in the same study was further explored by Sargent et al. (2011) in their interpretation of the metaphors used by professionals who were either fully retired or working after official retirement from their organisation. The language of these metaphors captured the diversity and nuances of lived experiences of individual professionals in the transition from career to post-career. In a further development, Sargent et al. (2013, p. 12) argue that research into contemporary meanings of retirement is warranted to illuminate “how individuals maintain, negotiate or re-invent the self in retirement”. Equally, it could be argued that further theorising is warranted about the nuanced meanings and negotiated pathways of late working life.
Scaling down to the perspective of the individual older worker, this final context has explored the literature to illuminate the understanding of the influences on people’s experiences of late career and retirement. A diverse range of individual variables at personal, family and job levels have been found to influence timing and pathways of people’s exit from work. Some theorise the interaction of influences as a dynamic tension of push and pull factors from work to retirement. Rational choice theory is one of the most prominent retirement theories explaining retirement behaviour but has been disputed as being too reliant on an economic basis for decision-making and as assuming that individuals have agency in the retirement process. Retirement theorists have further contended that the rationale for people’s decision-making needs to be understood within a broader context that attends to the interacting influences. Life course theory has also provided the basis of extensive research on the transition from work to retirement, in what many scholars suggest is an increasingly individualised process with blurred boundaries between two adult life stages that are also in a state of flux.

Some recent models reconceptualise retirement to reflect contemporary meanings and pathways and also the gendered nature of work and retirement trajectories. While quantitative studies in the career and retirement literature offer extensive information about the major trends and probabilities of the pathways an individual will follow, they do not provide nuanced detail about the experiences of an individual person during the period of late working life and transition to retirement in all its emerging forms. As a result, much remains unclear about how individuals negotiate the complexity of the opportunities and constraints they face in this life phase.

**Chapter review and research opportunities**

In this chapter I set out to present the landscape of the literature about late working life, the extension of working life and what transition to retirement means in contemporary settings. The literature was explored within a multi-level framework of macro, meso and micro perspectives as a way to consider the diverse influences on how individuals might experience these phenomena. And the influences were seen to
be complex, interacting, overlapping and often contradictory. Some of the key debates in the field concern the “burden” rationale for promoting longer working lives and the effectiveness of the associated policy thrust, individual agency in the timing and pathways of employment and retirement, the impact of predicted skill shortages on the older workforce, along with intergenerational equity and the diverse experiences within older cohorts. Working arrangements were seen to have become more diverse in recent decades, with many forms of non-standard work including self-employment. The contradictory notion of ‘working in retirement’ was also explored.

As the literature review suggested, the baby boomer cohort now represents a new demographic of older workers. At the macro level, workers in this age group are being encouraged to extend their working life and thereby delay retirement in order to ease the economic – and eventual social – problems that prominent discourses ascribe to them. At a meso level of conceptualisation, the imminent exit of large numbers of technical professionals from the labour force is predicted to create a critical skills shortage which will affect productivity and has implications for workforce planning for industries and organisations. And in a rapidly changing business environment with large numbers of employees approaching retirement age, it is argued that it will become more important for organisations to respond to the multiplicity of needs and interests of their valued late career employees in order to retain valuable intellectual capital rather than adopting a uniform approach. At the same time, the debate also presents the view that organisational policies and structural changes are disadvantaging the older workforce. At the micro or individual level, individuals must juggle a range of very different considerations as they negotiate this period of their careers and lives. The baby boomers are a group that not only have a reputation for embracing new ways of dealing with life and work but are now faced with an environment that tests that reputation, as the local becomes global in its volatility and possibility. Much of the existing theory and findings from empirical studies are based on large data sets, earlier cohorts of older workers and economic, social and employment conditions prior to the GFC.
Wang and Shultz (2010, p. 186) in their review of literature of empirical studies of retirement decision-making identified that the focus has been on single level analysis and argued that: “more studies are needed to examine how factors from different levels interact in influencing retirement decision making”. At the very least, it is important to understand how older workers’ perceptions compare with how socioeconomic, organisational and individual issues are being theorised in the literature and handled in public policy.

A small qualitative study (Aberdeen & Bye 2013) has represented older people as individual agents in negotiating and resisting the dominant discourses underpinning Australian government policies which shift the responsibility to the individual for their later life. Positioning of older individuals at the intersection of multi-level discourses offers a useful framework for investigating individual older workers’ experiences and perceptions of the dominant discourses aimed at extending working life, or delaying retirement, in the diverse contexts already outlined.

Against this background, it is concerning that relatively few qualitative studies in the scholarly literature explore how individuals in late career actually describe their experiences and views of issues of later working life and beyond. Clearly, there is more to be learnt from individual workers about how they negotiate the terrain of this life stage as another valuable dimension to understanding contemporary experiences of late career and transitions beyond full-time employment.

Informed by this literature review, I was able to refine and further focus my initial framing of the study. As I described at the opening to this chapter, I was initially interested to explore how professionals working in the later years of their career actually engage with major issues currently being discussed in public policy debates and academic literature. The literature review certainly reinforced the significance of these debates. I was able to tease out the different perspectives on the economic and social impacts of ageing workforces and populations, on avenues for prolonging working life, and the range of approaches that organisations pursue to retain or exit their older workers.
The more recent literature suggests that for individuals, the experiences and sense-making of later working life inevitably involve many factors, and are likely to be messy and emergent rather than an exercise in project management and control. It seemed to me that there would be value in focusing on a group of people who at least shared an occupation, rather than trying to study people drawn from a large range of different ones. The literature review also reinforced my initial interest in the technical professions – such as engineering – and the impact of aging workforces on individual professional practitioners. My attention was drawn to how these issues are made sense of by people in the technical professions that have historically been vital to Australia’s infrastructure and productivity, particularly as it is anticipated that large numbers of these professionals will be retiring from the labour force in the near future.

I was also curious as to how these professional practitioners regard the later period of their working lives and how they are considering their future when work is no longer central to the pattern of their lives. However, the literature review created a significant shift in the way I was thinking about life after work. My initial thinking had been rather conventional, in that I thought of retirement as what happened after someone stopped working. And in contrast to the lenses of planned retirement intentions and pathways that have been used in much past research, this study respects the seeming contradiction that retirement can involve work.

Insofar as it could, in its design this study has tried to take account of several multi-level aspects of late working life. At the macro level, the study focuses on baby boomers as the new cohort of older workers in the current Australian context post-GFC. At the meso level, a specific subgroup of professional occupations, professional engineers, will be studied across a diversity of standard and non-standard employment arrangements. And at the micro level, the study will seek the perspectives of individual older engineers for a nuanced understanding of their experiences in late career and their thinking about the stages beyond.
CHAPTER THREE  THE METHODOLOGY

Introduction

This chapter describes the methodology of the study. It begins by reiterating the study’s intent and giving an overview of the design of the study, which was conceived as an inductive and interpretive inquiry, and how it evolved over the course of the thesis work. It then explores how others have researched the issues that initially framed this project. Next, it describes the study’s design in more detail: its culture of inquiry, the sample created, and the interview questions that facilitated the conversations with participants. It then describes how the views of participants are presented, the sense-making of their words that I undertook myself, and the ways in which theory was used to aid that sense-making. It concludes with a critique of the strengths and weaknesses of the study.

The intent of the study and how its design evolved

The contribution of this thesis is to explore the experiences of engineers working late in their lives of professional practice, and to deepen current understanding of the intellectual and emotional issues that inform their commitment to practice at this time. However, as Chapter One indicated, it was not so obvious at the outset that this would become the focus of the work.

In its first framing, this project was focused on a central research question with a related, but different slant: how might the experiences and perceptions of professionals working relatively late in their lives be reflecting contemporary debates in public policy and the academic literature?

Particular debates of relevance included the economic and social consequences of ageing workforces and populations, the affordability of being retired for much longer periods of time than previous generations, and the approaches that organisations adopt to retaining or exiting older workers from the workplace. These debates raise many interesting questions and possibilities for inquiry. As well as the overarching
tensions of the economic and social implications of an ageing population (such as maintaining both national productivity and social equity and inclusion) the role of the professions in maintaining and refreshing varied social and physical infrastructures and capabilities presented itself as an important issue.

The literature review in the previous chapter explored the very different theoretical perspectives taken up in the academy in relation to aging workforces, suggesting that the phenomena involved are multi-dimensional and multi-layered. The debates within the literature also highlight the kind of contested and potentially confusing and challenging issues that form the context in which individuals and organisations try to make sense of emerging options.

The initial aim of the study, then, was to discover how these issues are made sense of by mature professionals in the second decade of the twenty-first century. And that was the framing that originally guided the focus and design of the study.

One of the many important choices to be made in designing a research project’s methodology is not just which theories are relevant and likely to be helpful in positioning and focusing the work, but what the relationship between theory and the inquiry process will be: inductive, deductive or a combination of both (abductive).

While a range of methodologies could have been employed to investigate the research question, a key philosophical assumption underpinning this study was a subjectivist world-view. An objectivist framework is based on the assumption that reality exists independently of human consciousness and that verifiable facts or truths can be deductively discovered in cause and effect relationships; in contrast, a subjectivist framework understands the nature of reality as social phenomena filtered through human consciousness in multiple and changing representations that are socially constructed according to the perceptions of individuals in their own contexts. Researching the underexplored phenomenon of late working life within a subjectivist and interpretive framework has provided the space for a diversity of stories to emerge
of the experiences and perceptions of individual professionals working relatively late in their lives in current times.

This study uses theory inductively. Whereas deductive studies use existing theory to test a hypothesis, inductive studies use theory as background information to ask “generative, juicy questions” (Cherry 2010b, p. 327) that are intended to open up fresh areas of exploration. This could happen where there has been little prior research or even in an area that has already received close attention and conceptualisation. It is particularly useful when a review of the literature suggests that multiple and interacting perspectives are in complex play and that it would be relatively arbitrary and unhelpfully restrictive to speculate about what any individual or group of individuals will actually do or say. In inductive analysis there is no assumed verifiable truth to be discovered, instead “categories, themes, and patterns come from the data” (Janesick 2003, p. 63) rather than being imposed on the data. The researcher “stays close to the data” (p. 63) to interpret the data and tell a coherent and convincing story of the findings.

Stringer and Dwyer (2005) have described inductive work as an ongoing process of emergent sense-making and from this perspective the process can be messy and confusing at times. Rather than having a specific starting point – such as an hypothesis - that tightly shapes and controls the design and focus of the study, in inductive work the initial framing guides, but does not pre-determine, the evolving shape of the inquiry. In other words, the purpose of using an inductive approach is to find out if the initial framing of the study reflects and holds the work that the participants actually choose to do when engaging with the interview questions and conversations, or if alternative frames are needed.

An inductive approach is also useful when an issue is emerging and the way it might be playing out in particular times and places or for particular groups of people is not clear. The experiences of the group chosen for study in this research can be considered emergent for several reasons. They mostly belong to the group known as baby boomers, although a few were older. Baby boomers have a reputation for inventing
new ways of doing things, and it could be expected that they might have new ideas about working and living later in life. And they also live at a time when changing demographics have forced systemic debates about the financial and social relationships that modern global economies and societies want to have with their older workers. For both reasons, times and practices are changing and research needs to follow the nature and impact of those changes.

As mentioned already, an inductive approach uses theory and literature differently from a deductive approach in the design of the study. A deductive approach develops predictions and even hypotheses from theory and previous research to guide the design of the research project. In contrast, an inductive approach uses theory and literature to justify the focus of the research, but it does not attempt to predict the nature of the findings (Creswell 2005, p. 40). Again, this is helpful when a phenomenon is emergent, or when it is multi-faceted or even complex, particularly when a range of disciplines have developed their own theoretical perspectives. In inductive studies, the initial literature review explores the diversity of perspectives that have been used to theorise a phenomenon, as well as identifying connections, overlaps, ambiguities and contradictions. Indeed, it could be argued that an abundance of diverse theory in many areas of human behaviour indicates that what is being studied is emergent, complex or in need of the sort of paradigm shifts that are currently occurring in fields as diverse as psychobiology and astronomy, where new technologies make it possible to observe things that were previously open only to speculation.

As reflected in the previous chapter, the literature relating to the initial framing of the study for this thesis was highly segmented, reflecting the many disciplinary perspectives that have been brought to bear on understanding the issues surrounding working later in life, such as economics, sociology, psychology, organisation studies, human resources management and life course theory. Across all these perspectives, working late can be understood systemically, organisationally and personally. So the initial engagement with the literature adopted a multi-level perspective to understand the diverse influences on how individuals might experience working in later career. And the influences were seen to be complex, interacting, overlapping and even
contradictory. One of the key debates in the literature is the burden rationale for promoting longer working lives. This is the argument that an aging population places significant financial and social strain on the rest of the adult population. Other issues explored in the literature include intergenerational equity; individual agency in the timing and pathways of employment and retirement; and the impact of predicted skill shortages as the older workforce retires.

Several other observations can be made about this literature. Very few attempts are made to engage with or reconcile the differences, gaps and contradictions that emerge for the reader, in terms of the connections between theory, policy and practice. For example, a serious contradiction is evident in the current dominant policy message for older workers to extend their working life to reduce their economic burden on younger generations, when at same time they might well be subject to age discrimination and their contribution not being valued in workplaces.

Another fundamental outcome of the literature review was the compelling sense that, despite the variety of academic perspectives used to study the phenomenon of working later in life, there has been relatively little interest in exploring how individual professionals make sense of the professional practice issues which emerge for them as they continue to work later in life in these uncertain and liquid times. While an academic might find it interesting to pursue these issues as an intellectual exercise, it is not clear how a working professional might think about or try to resolve the contradictions inherent in government policy and debates, the policies and practices of their employers and/or clients, and the advice offered to them as individuals by various advisors.

In light of the relative dearth of research on professionals in the later stages of their working lives, this study was intended to shine a light on how a particular group of Australian engineers in late career currently perceive issues of both working and extending working life, and of transitioning into the next stages of both work and life.
An interpretive culture of inquiry was then selected, generative questions were crafted, and an invitation was sent via a professional association of engineers in Australia, seeking participants for the study. Over a period of several months, the study created in-depth interviews with 34 male Australian engineers aged 55 to 77 years. The sample reflects the highly gendered nature of the profession as no women responded to the recruitment publicity. All participants identified themselves occupationally as engineers and had current or very recent experience working in engineering roles and using their professional expertise. Working arrangements encompassed ongoing full-time and part-time employment in large organisations, small or medium-sized enterprises (SMEs) and self-employment.

The key research questions were translated into a series of generative questions to open up dialogue. The questions were meant to trigger and broadly focus the conversation but not assume or limit what participants would say. Each person was provided with the key questions prior to the interview, and afterwards a summary of their own interview with an invitation to provide feedback.

Consistent with an inductive approach to data interpretation I then engaged in two readings of the texts without reference to the literature. The first reading of the transcripts focused on exploring how the participants gave meaning to their experiences of working life in late career. Participants had used the opportunity of the space provided by the interview to reflect not only on their experience of working later in life, but also on the changing context of their wider professional world. For this reading, I tried to present the world of their experience in their own words, with a minimum of my own interpretation. The biggest interpretive step I took was like that of a curator: selecting the material to be included and grouping that material in ways that would do justice to their words. The intention was to maintain a light touch. But inevitably the process was selective. Another curator could have chosen different material and arranged it in a different way. The best I could do was to keep the choices I made to a minimum and to make them transparent.
It had certainly been my intention to create a conversational space that would make it as easy as possible for the engineers to share their experiences and thinking. But in the way of inductive studies that ask generative questions, what turned up in those conversations took on a life of its own.

The engineers made the choice and the effort to follow up the invitation, and they mostly seemed keen to talk about issues of professional practice that bother them at this stage of their working lives. However, they did not talk about changes to public policy settings relating to the big debates referred to earlier. Nor did they talk much about their own preparation for a time when paid work might be less important for them. Instead they talked about their continuing interest in working as engineers and in the future of their profession. They talked about what it means to them now to be a mature practitioner, to be still deeply attached to their profession, and to have survived the sometimes unexpected twists and turns of their professional careers in the workplaces. They talked about being the custodians of knowledge that they consider to be vital for the country as well as the profession. Some talked with a sense of injustice and indignation about experiences of being devalued or shafted as professional engineers. And some talked about the tensions created by trying to hold on to work while experiencing the early stages of letting go.

I offered six themes as a means of grouping what the engineers spoke about: the changing meaning of work, future work intentions, being older in the workplace, passing on knowledge, de-engineering as a changing context, and meaning of retirement.

As a result of the first reading, the focus of the study was evolving in response to the words of the engineers themselves. Although still forming and emerging, my sense was that the exploration of the experiences of engineers working late in their lives would centre on issues of professional practice, and the intellectual and emotional issues that informed their commitment to practice at this time.
The second reading provided the opportunity for me to explore and construct my own sense-making, based on the six descriptive themes. As a result, I created four motifs: being mature engineers, becoming elders, indignation and stepping off. The final chapters of the thesis aim to bring together, and add to, theoretical frameworks that provide further insight into these issues associated with professional practice later in life. While this thesis is concerned with mature male engineers, it is hoped that it will suggest new insights and conceptual understandings that can be related to older male and female practitioners trying to extend their working lives in a range of different professional settings in a rapidly changing world.

The approaches used by others

The literature presented in the previous chapter indicated that the major research perspectives have been systemic and organisational rather than that of individual older workers. Of the studies that do focus on individual behaviour, quantitative studies have contributed knowledge of the variables influencing late career and retirement transition processes, with the focus of interest on retirement decision-making factors that predict older workers’ timing and pathways to retirement. Such variables encompass individual attributes, job and organisational factors, family factors and socio-economic factors (Wang & Shultz 2010). Quantitative studies with large data sets are well suited to providing an understanding of trends and patterns of majority behaviour, but they are not designed to capture or even reflect the lived experiences of a phenomenon at the level of the individual in all the complexity and ‘messiness’ of interacting influences. Further, a common assumption of quantitative studies is that an individual’s decision-making is rational and within their control (Jex & Grosch 2013), which might not be reflected in the experience of older workers. Indeed, from a multi-level perspective, the landscape of late working life for individuals can be understood as characterised by interacting influences that are complex, changing and contradictory. Recent commentary by Taylor et al. (2016, p. 11) contends that “quantitative approaches struggle to attribute meaning to the sometimes counter-intuitive and contradictory findings they elicit” as they try to understand how “relationships between age and work are shaped by gender, previous work experience,
life circumstances and choices, and constraints and opportunities posed by national characteristics of legal regulation or welfare regimes”.

To capture the individual perspective, which Taylor et al. (2016) have identified as deserving more attention, some studies have fruitfully used an interpretive approach to identify and explore interactions of multi-level influences on people’s pathways through late career and beyond (Bown-Wilson & Parry 2013; Loretto & Vickerstaff 2013) and the subjective meaning they attribute to their experiences (Sargent et al. 2011).

Qualitative studies investigating the phenomena of late working life have adopted a range of methodological approaches. Platman (2004) and Brooke (2009) used a case study approach for their respective studies of older professionals freelancing in the media industry and older professionals employed in the information technology industry. In both studies, the industry was the case that bounded the scope and recruitment of individuals to be interviewed and the analysis of the data provided by the older professionals formed part of larger studies of professionals in these industries. Sargent et al. (2011) incorporated both grounded theory and narrative analysis into their methodological approach so that the meanings of retirement expressed by the retired executives and managers emerged from their own metaphors, which were subsequently interpreted by the researchers for deeper insight. A narrative methodology shaped Oplatka’s (2007) study of school principals in late career and also Gabriel, Gray and Goregaoka’s (2013) study of older unemployed managers and professionals, which sought to identify the stories used by participants to convey their experiences and meaning making of job loss and their recovery processes. In-depth and semi-structured interviews have been the most common strategy of data collection in qualitative studies on the topic of late working life and transition to retirement on the basis that this method would “elicit information about key areas, allowing exploration of emergent issues in greater depth while remaining responsive to individual respondents” (Davies & Jenkins 2013, p. 325). Some studies opened the interview with a career history or timeline (Bown-Wilson & Parry 2013;
Davies & Jenkins 2013; Sargent et al. 2011) to position the elicited accounts within a framework of career development.

The time frame used in most studies has most commonly been cross-sectional with a single interview, a choice of approach that may well be pragmatic to meet research constraints on time and funding, although Oplatka (2007), for example, spread the data collection over two interviews with school principals, with the first interview setting the context of the career life story before turning attention to experiences and meanings of working in late career. Platman (2004) and Gabriel, Gray and Goregaokar (2013) incorporated a longitudinal dimension to their studies, conducting follow-up interviews with participants over a 13 month and two year period respectively, as well as staying in touch informally during the course of the study to monitor changes in participants’ circumstances. Ongoing contact by email and telephone was used to sustain the interest of the participants in the study. A longitudinal design can add valuable information about changing circumstances and meanings for the participants, but it also requires more time and resources from the researchers and a greater commitment from the participants than does a snapshot cross-sectional design.

The selection of samples for these qualitative studies also targets a variety of personal and employment characteristics. For instance, in most studies of late career and retirement transition, participants’ employment has been with large organisations, usually in the private sector but also universities and the public sector. In contrast, Brooke (2009) interviewed IT professionals employed in small or medium-sized enterprises (SMEs) and Platman (2004) interviewed self-employed professionals in the media industry.

Definitions of older workers are operationalised differently across studies so that age ranges vary for selected samples. Bown-Wilson and Parry (2013) defined older workers as 50 years and over and eligible for a retirement pension, which resulted in the average age of 55 years for their eventual sample. Davies and Jenkins (2013) also used a selection criterion of eligibility for retirement and their sample was aged between 58 and 70. Sargent et al. (2011) incorporated a different criterion for the age eligibility of
their sample of retired managers and executives, namely that they were in the baby boomer cohort (born between 1946 and 1964), with a resultant mean age of 59 years; and to operationalise retirement they turned to the participants’ subjective identification with being retired.

While the majority of quantitative and qualitative studies do not disaggregate older workers by occupation, the previous chapter drew attention to studies of single professions. However, the focus of these studies was mostly on retirement transitions and decision-making. The literature review suggested that the profession of engineering has rarely been the focus of empirical study into the experiences of individual professionals in later working life and opened up another avenue for “a nuanced approach that never takes for granted that all people in a given age category are alike” (Taylor et al. 2016, p. 11).

Gender presents another selection criterion for sampling. Most studies cited in Chapter Two did not specifically target gender and typically men outnumbered women in the resultant samples. In contrast, two qualitative studies specifically targeted women’s experience of later working life and retirement transition on the basis that potential gender-based differences may be hidden in male-dominated samples (Brooke, Towns & Cherry 2013; Everingham, Warner-Smith & Byles 2007). Taking a different approach, one study purposely selected a diverse sample across multiple variables including age, gender, marital status, geographic location, labour market status, income, health status and caring commitments (Loretto & Vickerstaff 2013).

Methods of data interpretation in the qualitative studies varied in accordance with the methodological approaches adopted. Thematic analysis and the creation of typologies were the most usual methods used.

**The culture of the inquiry**

Because of the relative lack of research focusing on the experiences and views of mature professional practitioners, the culture of inquiry chosen for the study was interpretivist. The rationale for this choice is explained in what follows.
Denzin and Lincoln (2003) have framed interpretive inquiry as a process based on constructing and crafting meaning from the words of individual and collectives. A number of writers and thinkers over the years have also contributed to contemporary understandings of interpretive inquiry, including the foundation work of Glaser and Strauss (1967).

There are several ways of actually undertaking interpretive work. According to Eisner (1998), it helps to think about a range of ways that form a continuum. At one end of the continuum is rule-based interpretive work and at the other end there is what he calls connoisseurship. Rule-based interpretation is guided by tight, prescribed protocols that allocate responses to pre-determined groups in ways that are meant to be uncomplicated and that do not invite debate. The next step along the continuum is a process involving the development and use of codebooks. A codebook is developed by analysing subsets of the data. The codebook provides a number of examples of the kinds of response which should be allocated to a particular code or category. In this way, the codebook can then be used to analyse all the remaining data. These rule-driven or code-driven approaches stand in contrast to connoisseurship. One way of understanding connoisseurship is in terms of artistry, which is a multi-layered process that can range from holistic reading of artefacts, the crafting of themes and motifs and the development of stories or narratives that provide sequence and context for the reading. Some would argue that this end of the continuum would also accommodate critical and discursive readings.

The choice of approach will depend on the specific understanding of interpretive work adopted by the researcher. This study adopted a constructivist interpretivist approach (Tuominen, Talja & Savolainen 2002, p. 273). An important feature of constructivist interpretivism is that the language people use isn't considered to be a transparent or direct representation of events or situations they might be describing, even if what they are talking about happens to be their own beliefs, opinions or feelings. This has an important consequence, because it means that researchers do not assume that a participant in their research will consistently use the same language and meanings when they talk about their experiences and perceptions. Through language people can
and do create different versions of events, depending on the context, whom they are speaking with, and why.

This stance also impacts what ‘truth’ means for the researcher. Texts are not treated as accurate representations of a person’s beliefs or attitudes, or as revealing the true nature of events or situations. Data are created, rather than being found or revealed, and physical and social reality is not understood as being discoverable in terms of facts and laws.

A constructivist interpretivist will try not to smooth over inconsistencies, or ignore or delete variations that occur within and across the texts created through conversation with people. The contradictions in what people say are valued, not eliminated: “Regularity within the accounts of a single individual is therefore less interesting than the regularity that exists in the elements used by different speakers to describe the same person, event, or thing” (McKenzie 2005, p. 222). Similarly, they will not force their participants’ accounts into neat categories just for the sake of it.

The texts that present the words of participants – or represent their actions – are put together very carefully in a constructivist interpretivist approach, because their words or actions are regarded as being the central focus of the research. For a researcher working with transcripts, numerous and sometime lengthy quotes are provided to the audience for the research. In this way, texts become key artefacts and are transparently presented in ways that can be studied by others who can conduct their own interpretation of the texts. In this study, I initially engaged with interpretation of the content of the interviews by a holistic reading of the transcripts and development of a tentative set of themes. In the spirit of Eisner’s (1998) connoisseurship, I drew on the verbatim quotes from the participants to convey the diversity and nuances of their accounts of their experiences and perceptions.

This culture of inquiry sits well with an inductive approach to the use of theory because in its approach to methodology, design is seen as emergent, as work continually in progress. Brinkmann and Kvale (2015) have described the constructivist
interpretivist researcher as a craftsperson, both in terms of interviewing and data
interpretation, as they negotiate and navigate ambiguity and uncertainty and
continually make choices about how to proceed, as well as what to put on the record.

And Brinkmann and Kvale (2015, p. 219) further explain that the constructivist
interpretivist researcher does not treat the text of the transcripts as “a collection of
statements” or as a final product but instead works with its passages “as stepping-
stones toward a continuous unfolding of the meaning of what was said ... unfolding its
horizon of possible meanings”. Hence it is important for the researcher to approach
the reading of the data set with an open and theory-free mind – to the extent this is
possible – rather than interpreting through the lens of particular theoretical
perspectives. As interpretation of the data unfolds, a return to the literature can assist
the researcher to develop further insights not only from theory already identified as
background information for the study, but also from new theoretical perspectives that
clarify, deepen or widen interpretation (Silverman 2005). This further layer of
interpretation can fruitfully “expose theoretical boundaries and push theoretical
insights” (Bansal & Corley 2012, p. 513) and lead to the development of “emergent
theory to expose the phenomenon in new light” (p. 511). In this way, theoretical
insights can not only provide more nuanced understanding of a phenomenon in a
particular context, but also open up possibilities for generalising findings to other
contexts.

In the culture of inquiry followed in this study, rigour can be sought in two key
respects: substantively, that is, by establishing the credibility and integrity of the
content of the data set and findings, including the sources of the researcher’s
understandings of the topic (Angen 2000); and methodologically, by transparent and
explicit accounts of the methods used. A number of specific approaches can be used to
strengthen the rigour of an interpretive study along both these dimensions. These
include creating or finding data in several different ways; co-creating meaning with
participants; offering extensive examples of the words and actions of participants
without excluding variations, inconsistencies, gaps and ambiguities; making very clear
the difference between the voices of participants and the interpretations of
researchers; member checking with participants, stakeholders and representatives of the relevant community; referencing historical and present understandings that have been documented or recorded; exposing the motives, values and perspectives that colour the thinking and actions of the researcher; providing an audit trail for transparency about how interpretations have been reached so that other people can make their own judgements about the consistency of the data and findings (Lincoln & Guba 1985; Merriam 2009; Rice & Ezzy 1999).

The creation of the participant group

An avenue opened up for the thesis research when Professionals Australia, the union covering a range of technical professions, expressed an interest to be involved in research that would help them better understand how to meet the needs of their older members. Engineers comprise half the 25,000 membership of Professionals Australia and the profession of engineering is recognised as vital to a productive economy. As Chapter One indicated, engineering covers a very broad range of disciplines. However, from early discussions with Professionals Australia, it was likely that most members were engineers in the field of civil engineering and the majority of the eventual sample were civil engineers.

Purposeful sampling, or criterion sampling as it also called, intentionally samples a group of people that can inform the researcher about the research problem under examination (Creswell 2013). Unlike random sampling, its aim is not to be statistically representative of the general population but to allow the researcher to deliberately create a group of participants who have certain characteristics in common and are likely to be information-rich so that a particular phenomenon can be studied closely (Marshall & Rossman 2011; Rice & Ezzy 1999). I set out to construct a sample of 30 to 40 participants from the target group of late career professional engineers who were currently in the workforce or had recently left the workforce.

My initial age target for late career was people between 60 and 70 years of age in order to focus on baby boomers in later working life. However, prior to the ethics submission I lowered the age range to 55, for two reasons. The definition of late career
as 55 years and over is consistent with the Australian Bureau of Statistics (ABS) definition used in its analysis of workforce participation by older people (Australian Bureau of Statistics 2010b). But I was also keen to increase the likelihood of recruiting women to the study. I had anticipated that the recruitment of women would be a challenge due to the small proportion of women in the profession overall and their limited representation in the mature age group. As it turned out, no women expressed interest in being interviewed over the period in which interviews were scheduled to take place. It could have been feasible to actively try to recruit even a small group of women to the study when it became obvious that they were not going to respond to the invitation issued through Professionals Australia. However, given that the men who participated had not only volunteered but were very keen to be interviewed, I would almost certainly have had to recruit beyond Professionals Australia. Given that it was likely that only a small number of women would be included, I was concerned that their inclusion would be seen as tokenism. I decided instead to include the perspectives of women in a more systematic way by using the available – but admittedly limited - research on mature women professionals to help deepen my own sense-making of the data set created through my study.

The recruitment criteria did not differentiate in relation to working arrangements, so the invitation included people who had continued on their full-time main career path or downshifted to other arrangements in the same organisation; or who had moved to different working arrangements such as self-employed consultants or contractors; or resumed work after a period of not working. The invitation also included people who had recently left the workforce and were interested to contribute their understanding of their experiences of late working life. Participants could come from the public and private sectors in different sized organisations, that is, large organisations or SMEs, and could also include those who were self-employed.

The study was publicised nationally to the engineering membership of Professionals Australia through items in the organisation’s e-newsletter and an article in their magazine mailed to members. I also addressed a members’ financial planning pre-
retirement seminar in Melbourne to publicise the project. Word-of-mouth publicity was encouraged throughout the study but only became effective in later recruitment.

The eligibility criteria set out in the recruitment publicity (Appendix 1) covered the age range, having a career background as a professional engineer, and being currently or recently in the paid workforce. Publicity also highlighted that the study was seeking participants from a diversity of working arrangements. Participants self-selected as recruitment to the study required that they email me to express their interest. Once I received their expression of interest via email, a consent information statement and form were provided to participants (Appendices 2 and 3).

My own contact with participants began with an initial telephone call to confirm that they met the eligibility criteria. I also approached the initial telephone conversation as a crucial step in demonstrating a respectful attitude to the value of their contribution: I explained they would have opportunities to direct the conversation into areas they believed were important. A copy of the interview questions was then sent to each participant prior to the interview (Appendix 4).

Building the sample took place in two phases. The first phase targeted those aged 55 to 70. As the study progressed, responses from the participants pointed toward the value of exploring the experiences of people who had already extended their working life beyond typical retirement ages. After approval for an ethics modification, a second phase of recruitment targeted those aged 70 years and over.

The recruitment process led to interviews with 34 professional engineers conducted between April and December 2014. After interviewing 34 engineers, I thought that the work had reached saturation point, meaning that no new perspectives were coming through.

All of those interviewed had long careers in engineering. All participants identified themselves occupationally as engineers and had current or recent experience working in engineering roles and using their technical expertise. The disciplines of engineering
represented were civil engineering (22), mechanical and industrial (5), aerospace (3),
electrical and electronic (3), and materials (1).

Their ages ranged across 22 years, the youngest aged 55 years and the oldest 77 years
with an average age of 64.6 years. There was a 50:50 split between those younger than
65 and those 65 or older.

As already mentioned, the participants were men as no female engineers responded to
any of the publicity. The lack of response is likely to reflect the low representation of
women in the profession in the age range. In 2014 women constituted only 9 % of
Professional Australia’s engineering membership and a much smaller percentage
would have been aged 55 plus.

Most participants (22) were currently or recently employed in the workforce in a
variety of working arrangements encompassing ongoing full-time and part-time
employment in large organisations and SMEs, while 12 were self-employed. The length
of time in self-employment ranged from recent months to 30 years. The most common
industries in which they worked were local government, utilities, traffic and transport.
Eighteen were based in capital cities, 15 in regional/rural areas and one overseas.

The following graph shows the age distribution of the participants according to
whether they were employed in organisations or self-employed.
The interview conversations

The interview was designed to provide a space for participants to freely express their views without being limited by leading questions, allowing fresh perspectives to emerge. Some people were very forthcoming with their responses, needing few prompts, whereas others seemed to be expecting more direct questioning. In both situations additional questions were used for clarification and expansion, not to challenge or confront or put forward countering views.

As mentioned already, I sent the interview questions prior to the interview itself (Appendix 4), following the advice of Creswell (2013) that this demonstrates respect for the value of participants’ contribution, as well as providing an opportunity for choice and control in the formulation of the data they would contribute. Participants could choose how much time to spend considering the questions beforehand and in practice this did vary from a glance at them to written bullet points, to comprehensive written responses emailed to me before the interview.
Some participants said they were appreciative of being provided with the questions beforehand. After nine interviews I wrote a reflection in my journal that “providing the questions beforehand has been a winner” and that “the nature of the questions seems to be working well”. One participant in the initial telephone conversation said something along the lines of:

I don’t need any more info about the project than what I’ve already read. Send me the questions. I’ll have a think about them and then we can talk. I haven’t done many of these interviews, but I find when you’re hit cold with questions, you think about it later in the day and realise you’ve missed some key points.

Another participant emailed me expressing surprise that there were so few questions.

The questions sent out were:

1. What are your current employment arrangements? (eg employed, self-employed; full time, part time or project-based; roles).
2. How have these work arrangements changed (if at all) in recent years
3. What suits you about your current employment arrangements?
4. How typical do you think your situation is for people at your stage of career in your profession?
5. What does work mean to you in your life now?
6. What is your best guess at how your involvement with work will pan out from now on?
7. What would you advise professionals in your field who are in late career and contemplating leaving their full-time employment for different working arrangements or interests?

This wording was chosen so as not to lead participants to a problematic perspective or to specific responses. The word retirement was not used in the seven questions, given the possible ambiguities around the concept exposed during the literature review.
During the actual interviews, I sometimes changed the order to be more attuned to the direction of the conversation and made links to earlier responses that the participant had made. I also used follow-up prompt questions to clarify the meaning of their responses or to delve to a deeper level of understanding. From the outset I included two additional questions:

- Is there anything else you would like to say?
- What prompted you to contribute to this research?

Interview conversations with participants took place in person (11), by telephone (20) and via Skype (3). All interviews were audio recorded on a digital device and uploaded to computer for subsequent transcription.

**An overview of the stages in the interpretive work**

I have described already how important it is in constructivist interpretive sense-making that the researcher’s own interpretations – whether they are undertaken in ways that are conceptual and analytical, intuitive or aesthetic – can be clearly distinguished by other readers from the words of the participants themselves. Researcher interpretations are sometimes called *readings*. They are presented in transparent ways that others can study, so that others can make their own sense of the presentations if they wish.

I engaged in two different readings of the texts to fulfil these requirements. The first reading (presented in Chapter Four) tried to show how the participants individually and collectively responded to the interview prompts in their own words as a representation of their experiences and understandings of their worlds. Inevitably, even with the lightest of touches, there was selective interpretive work being done in this reading. I acted like a curator, selecting the material to be included and grouping that material in ways that would represent their words at both individual and collective levels. Both the selecting and the grouping are activities that would be performed differently by someone else. And it was very challenging to try to balance the need to do justice to individual voices and at the same time gather and present patterns across the whole group. The grouping into the six themes was intended to
provide enough structure to hold the patterns or regularities across the whole group, while also providing the space for a range of individual voices. I tried to keep the choices I made to a minimum and to make them transparent, so the chapter includes many verbatim quotes to convey the engineers’ representations of their experiences and understandings of their worlds.

I developed six themes that I hoped would be broad enough to hold the full range of things that people said, but also distinctive enough to draw out patterns. I gave the themes the titles of: changing meaning of work, future work intentions, being older in the workplace, passing on knowledge, de-engineering as a changing context, and meaning of retirement.

My second reading involved taking a step back, reflecting on the themes and the ideas and statements that were collected around them, and constructing my own interpretation of their words. Again, this reading is only one way of understanding the words of the engineers. In keeping with the culture of constructivist interpretive inquiry, it was not appropriate to assume that I could ‘know’ the thinking of any individual engineer. Or to claim to have uncovered the essence of their experiences and behaviours; or to know or to understand what their intentions, feelings, thoughts or aspirations actually were. Pragmatically, too, there was not much I or anyone else could really claim to know on the basis of a one-off meeting. But it is possible to have some confidence when different people seem to be saying similar things.

Chapters Five and Six present the four motifs that I developed as a framework to represent my own interpretive work that offered up larger meanings to the experiences and perspectives that the engineers gave voice to in our interviews. The first two motifs are being a mature engineer and being an elder. The other two motifs are indignation and stepping off. The crafting of each motif stimulated a further sense-making process. This took the form of 16 stimulating questions that emerged through the work itself. I should make it clear that these questions are expressed in language and evoke concepts that were not offered by the engineers themselves. But nor were they questions that were in my mind prior to the first and second readings. The
Questions reflect a continuing development of my own inductive and interpretive work and seemed to me to open up further avenues for inquiry.

Questions emerging through the construction of the motif of being a mature engineer:

Question 1. What fuels the changing sources of work meaning for these engineers as mature practitioners in later career?

Question 2. How do individuals negotiate the terrain of their attachment to work when their sense of self as a mature practitioner is not recognised or valued by others?

Question 3. What is the importance of a sense of belonging for mature professional practice?

Question 4. How can we understand the desire for continuing influence and impact in late career?

Questions emerging through the construction of the motif of being an elder:

Question 5. What underpins a strong desire to pass on knowledge?

Question 6. How can the desire to leave a legacy through knowledge transfer be understood in the context of later professional life?

Question 7. How can we understand the dilemma facing many mature practitioners that they may be at the peak of their experience and knowledge yet lack organisational processes to ensure their knowledge survives into the future?
Question 8. Do mature practitioners necessarily have the means to pass on the knowledge in their heads? Can they articulate what is valuable and do they have the skills for successful transfer? And do they have access to younger practitioners ready to engage in knowledge transfer?

Question 9. Will there be a future for mature practitioners in modern organisations if knowledge is treated as a commodity?

Questions emerging through the construction of the motif of indignation:

Question 10. What does it mean for professional practice if a mature practitioner lacks a sustaining future orientation for their own working life and for their profession as a whole?

Question 11. How is professional practice in later life impacted if organisations are seen to be targeting for retrenchment their most experienced employees (“veterans”) with critical knowledge?

Question 12. What happens to practice as mature professionals realise they can no longer stay as long as they wish in the current employment environment?

Questions emerging through the construction of stepping off:

Question 13. Why are the images of retirement so stagnant and unappealing for many of these engineers?

Question 14. What blocks contemplation of a future beyond professional working life?

Question 15. How do we understand the later life cycle of professional development and professional competence?
Question 16. How does self-employment in late career affect conceptualisation of retirement?

Between them, this set of 16 questions signal opportunities for making further and deeper sense of the words of the engineers. In the context of this study, they also make transparent the bridge I built between the words of the participants, my own interpretations of their words, and the constructs and theoretical frameworks in the literature that could be used to deepen and strengthen the possible understandings of myself and others.

The 16 conceptual questions could all potentially have been taken to the literature for a deeper theoretical understanding of the issues of the engineers. They were developed in an attempt to do justice to the words of the engineers and to the range of serious issues that I interpreted from their words. The questions were rich in possibility and could have taken the thesis in many different directions.

However, it soon became clear that I could not take all sixteen questions to the literature in the later chapters of the thesis without limiting the engagement with the literature to a relatively superficial treatment of the issues and ideas. As a result, I ended up crafting six questions that tried to capture those of the original sixteen that related directly to the four motifs that I had constructed. This was difficult because it meant attempting to distil the questions so as to capture their essence while retaining their range. Some of the 16 questions connected across a number of motifs to form broader questions.

I eventually distilled the initial set of sixteen questions that arose from the motifs into the following six questions:

Question 1. What does it mean to be a mature engineering practitioner in later career?
Question 2. How do mature engineers struggle with and deal with the desire for continuing influence and impact in late career? In particular, how do they negotiate the terrain of their attachment to work when they perceive their status as a “veteran” is no longer valued in the modern organisation?

Question 3. What does it mean for professional practitioners if they not only doubt the future for their own practice but also believe that the future of the profession is being undermined?

Question 4. With the master-apprentice mode of knowledge transfer now outdated in most modern organisations, how could mature engineers cultivate elder roles and skills to pass on their practice wisdom to younger engineers and to their wider professional settings?

Question 5. How can continuing professional development be reimagined and revitalised for mature engineers in the later part of their careers?

Question 6. With these engineers’ dominant images of retirement as stagnant and unappealing, and phased employment, self-employment and volunteer work envisaged as a means to extend professional life, are there glimpses into how professionals with a strong attachment to their work might negotiate their way to a new phase of life?

Chapter Seven revisits the ways in which the initial literature review was able to offer useful concepts and theory for engaging with each of the six conceptual questions that had emerged inductively from the research. Chapter Eight presents the different literature that was needed to do the further inductive theoretical work that was beyond the scope and goals of the initial review. Together these two chapters can be considered a third reading of the data set as the engagement with previous and new literature enables further broadening and deepening of interpretation of the spoken words of the engineers in the interviews.
Several of the original sixteen questions had to be acknowledged but omitted from the set of six generative conceptual questions that drove my return to the literature. The omitted questions are also revisited in Chapter Nine as a fruitful source of possible future research questions.

The following diagram provides a summary and visual mapping of the stages of interpretive work of the thesis.
Figure 2: An overview of the stages in the interpretive work

Q.1. What does it mean to be a mature engineering practitioner in later career?

Q.2. How do mature engineers struggle with and deal with the desire for continuing influence and impact in late career? In particular, how do they negotiate the terrain of their attachment to work when they perceive their status as a “veteran” is no longer valued in the modern organisation?

Q.3. What does it mean for professional practitioners if they not only doubt the future for their own practice but also believe that the future of the profession is being undermined?

Q.4. With the master-apprentice mode of knowledge transfer now outdated in most modern organisations, how could mature engineers cultivate elder roles and skills to pass on their practice wisdom to younger engineers and to their wider professional settings?

Q.5. How can continuing professional development be reimagined and revitalised for mature engineers in the later part of their careers?

Q.6. With these engineers’ dominant images of retirement as stagnant and unappealing, and phased employment, self-employment and volunteer work envisaged as a means to extend professional life, are there glimpses into how professionals with a strong attachment to their work might negotiate their way to a new phase of life?
My approach to actually doing the interpretive work

Brinkmann and Kvale (2015) point out that interpretive work begins during the actual interview conversations, as interviewers make a continual stream of implicit and explicit decisions about how to engage: when to be silent; when to encourage expansion; when to seek clarification; when to offer a tentative interpretation to help the person being interviewed gain clarity about their intended meaning or to encourage deeper reflection; and when to make links between their different comments or topics of the interview. To verify that I had understood the meaning of what they were relating to me, to gain further clarity and to make connections between the threads of their narratives, I paraphrased the engineers’ words and offered that back to them. This often prompted them to go into more depth or to expand on the topic.

First reading

My next interpretive work was to engage with a printed version of each individual transcript. I found it helpful to create in my mind a dialogue or conversation with each of the transcripts (Merriam 2009). This felt as though I was in another conversation with the person I had interviewed but in a different dimension from the real-time version. I understood that my tasks at this point were to establish the range of things that people had to say and to see what general groupings or themes emerged that could be used to present their responses. To start these tasks, I used colour highlighting, underlining and making notes in margins. My focus was on the words of the engineers rather than my own assumptions and constructs. And as I have mentioned already, I positioned myself in a literature-free zone so that I could keep my mind open to the meanings being expressed by the participants, rather than framing my thinking in terms of theories emanating from other research.

I next wrote a three to five page summary of each of the interviews. This process took place concurrently with other ongoing interviews and transcriptions. The purpose of the summary was two-fold: as a form of member checking to reflect back to the participants my understanding of what they had told me, incorporating their own
words and expressions; and to assist my own interpretive work. Writing the summaries involved a different way of engaging with the transcripts. This time I was trying to create an account of the interview to give back to participants. The process required another careful exploration of each transcript, which triggered further tentative jottings of possible themes in the margins. As I started to write the first summary I decided to write it in the first person, so the document became the participant’s own statement. I emailed the completed summary to the participant for their feedback and received 22 responses from the 34 emailed summaries (a 65% response rate). The feedback I received indicated that people were satisfied with my representation of their contributions, with only a few suggested minor edits or requests to remove possible identifiers in demographic or employment details.

This process of working with the individual transcripts, preparing summaries and getting feedback from the engineers resulted in an emerging and tentative set of themes, such as working arrangements, meaning of work, future working life, opportunities/positives, constraints/negatives, the advantages or disadvantages of being older, meaning of retirement, and passing on knowledge. I did not have any preconceived ideas about themes but allowed these to emerge. The labels for these emergent themes were a blend of the participants’ words or phrases, my paraphrases and “names the researcher composes that seem to best describe the information” (Creswell 2013, p. 185).

I then created a series of large visual maps of the emerging possible themes, and carefully read through each one, noting on the map the range of responses that had emerged. Each response was labelled with the number/letter code I had used to de-identify the engineers. The code included their number and letters indicating if they were self-employed (SE) or employed by an organisation (Org). These codes also appear in the thesis at the end of each quotation from the transcripts. They are included so that readers can get a sense of the range of transcripts that are drawn upon throughout the thesis.
The final step was to transpose the maps of the themes into tables of text for each emergent theme, with illustrative quotes as evidence of the choices I made (see Appendix 5 for an example of the emergence of the theme of passing on knowledge). The visual maps and the linear tables gave me two ways of tracking and representing the emerging themes.

The result of this first reading that aimed to show their world is presented in Chapter Four.

**Second reading**

After completing the first reading, my task was to develop my own interpretation of their words. To do this, I was able to work with both their individual words as contained in each transcript and with the collective patterns reflected in the six themes. I was seeking possible ways of understanding that did not simply replicate the themes reflected in the first reading. I wanted to explore the possibility that other ideas and concepts linked the themes, or offered different ways of understanding them. To do this, I combined a re-reading of the material organised by themes presented in the first reading, with NVivo coding of the complete transcripts (see Appendix 6 for illustrative examples of my NVivo coding of passing on knowledge).

My re-reading of the artefact created and presented as Chapter Four allowed me to work at a more abstract level in trying to construct patterns, which I decided to call *motifs* in order to clearly distinguish them from the *themes* developed through the first reading.

Searching for instances of actual words and phrases across the 34 transcripts and summaries using NVivo was easy compared with the print-based manual sorting I had undertaken in constructing the first reading. The visual representations of the nodes and sub-nodes in NVivo through lists and maps also helped me to more readily construct the motifs.
Indeed, the use of NVivo allowed me to have the best of two very different ways of undertaking interpretive work. I was able to have the benefit of the NVivo work while also using writing itself as a key interpretive approach. Data interpretation is a sense-making process which, according to Creswell (2013, p. 187), entails initial sorting of different statements, developing categories of some sort and then organising categories “into larger units of abstraction”. Sense-making and abstraction can involve “hunches, insights, and intuition” (p. 187). The act of writing is often relegated to report-writing or “writing up” as the final task. But Pelias (2011, p. 660) describes it as a dynamic and iterative process of sense-making that is integral in bringing to the consciousness of the researcher an array of potential meanings from diverse perspectives:

Writers come to realise what they believe in the process of writing, in the act of finding the language that crystallises their thoughts and sentiments. It is a process of “writing into” rather than “writing up” a subject. When writing up a subject, writers know what they wish to say before the composition process begins. When writing into the subject, writers discover what they know through writing. It is the process of using language to look at, lean into, and to lend oneself to an experience under consideration.

Qualitative data interpretation is not a linear process (Braun & Clarke 2006; Creswell 2013), even though it may be presented as such. While writing was an important tool for clarifying my understanding of the descriptive themes at the first level of data interpretation (Chapter Four), it became more vital in my struggle to make a deeper level of sense in the second reading (presented in Chapters Five and Six).

**Ethics**

As the study involved recruiting and interviewing participants, it required ethics clearance from the university and written informed consent from each participant prior to being interviewed. The application for ethics approval of a research protocol appears at Appendix 7 and the approval from the Swinburne University of Technology Ethics Committee is at Appendix 8.

The initial ethics application anticipated that the primary mode of interview would be face-to-face in Melbourne, with telephone interviews as an alternative. Following a
nation-wide response to the publicity, additional clearance was obtained for interviews by telephone and audio Skype connection. Widening the age range to over 70 years and more specific targeting of self-employed engineers also required modification to the ethics clearance.

The privacy and anonymity of participants and their employing organisation was incorporated into the ethics clearance. Professionals Australia submitted a letter outlining their support of the project and their willingness to assist with publicising the project to the members. Support was specifically the provision of publicity to members about the project for recruitment purposes and the provision of meeting space for interviews if required. The association did not require its own ethics clearance process for the project and agreed to be acknowledged and named in publications. Professionals Australia did not seek to influence the design of the study or the writing of the thesis.

The protection of privacy and storage of data has been conducted in line with Swinburne’s ethical guidelines. The contact details of the three participants interviewed via Skype were deleted from my Skype account immediately following the interviews.

**The strengths and weaknesses of the study**

A number of criteria have been suggested for evaluating the robustness and rigour of interpretive studies. Robustness and rigour do not mean that other readers of the data would reproduce or replicate the readings offered by the researcher. Or that the conclusions offered will claim validity in terms of enduring truths. Lincoln and Guba (1985) introduced the concept of trustworthiness to qualitative research as a replacement for the positivist concept of validity. At that time they suggested *credibility, transferability, dependability, and confirmability* as the more apt criteria, and later added *authenticity*.

Others have suggested their own preferred criteria. Eisner (1998), for instance, has proposed that rigour in research needs to meet relevant criteria that include
coherence, consensus, plausibility and utility. Here, coherence refers to a cogent and supported argument; consensus entails consistency between the data and interpretation or resonance with the reader’s own experience; plausibility means that the findings and interpretation make sense; while utility reflects a value judgement or ethical stance that research should make a useful contribution to understanding or taking action on a social phenomenon.

Like Eisner, others too have highlighted the importance of research being useful and relevant with potential for translation into changed practice (Morgan 1983a; Stringer & Dwyer 2005), which Angen (2000, p. 388) refers to as research that is “pragmatically informed”. Such research should also be ethically respectful of those participating in the research, give prominence to their voices and attempt to minimise harm (Angen 2000; Bowden & Green 2010; Groundwater-Smith 2010). Lather (1993) has argued that researchers should not set out to have the last or definitive word, but rather, adopt a generative, rhizomatic stance, opening up and stimulating further inquiry and debate. She uses the metaphor of a rhizome to convey the sense of “a journey among intersections, nodes, and regionalizations through a multi-centered complexity” (p. 680). The interpretive research process is not linear but full of messes, ambiguities, tensions and contradictions that “open thought up to creative constructions” (p. 680) and need to be retained and transparently presented by the researcher. Lather also argues for “voluptuous validity” where interpretations are offered as contextual, tentative, temporary and incomplete, inviting others to reinterpret and reconceptualise as a work in progress. Similarly, Morgan (1983c) posits that we can only contribute to a potential, possible and partial understanding of complex multi-faceted phenomena and that a pluralistic attitude allows for the co-existence of contradictory knowledge. By presenting rich, thick descriptions of the data and the context, readers can make their own judgements about the rigour of the research, its relevance to them and its transferability to other contexts (Creswell 2013; Merriam 2009).

Richardson (1994) has proposed crystallisation as an alternative to triangulation as a criterion for evaluating research. She challenges the notion that there are fixed points
from which to view and interpret the social world. The metaphor of a crystal holds the concept of multiple perspectives that are continually changing depending on the angle of viewing. In common with Lather (1993), Richardson highlights the existence of multiple truths and offers an approach to rigour that provides readers with a “deepened, complex, thoroughly partial, understanding of the topic” (p. 522). And crystallisation requires that the researcher, as the primary instrument of the research, be self-reflexive and as transparent as possible about their personal, political and ideological stances that might influence their motivations and approach to the research project (Marshall & Rossman 2011; Richardson 1994). Creswell (2013) identifies two strands to reflexivity that a researcher should include in their writing: one is their own experiences with the phenomenon, and the other is a reflection on how their experiences, values and biases may have impacted on the findings, their interpretations and the conclusions. If, as Morgan (1983b, p. 405) suggests, “in research, as in conversation, we meet ourselves”, then the researcher’s reflections and critique of their integral role in the research processes and outcomes provide an important form of transparency for readers to take into account in their evaluations.

As noted earlier, the design of an inductive study also includes a strategy for rigour that requires the researcher to approach the reading of the data set from a theory-free stance so they can remain open to the possible meanings that might emerge from iterations of interpretation (Creswell 2013).

Together, these dimensions of robustness and rigour provide a framework for systematically reviewing the strengths and weaknesses of an interpretive inductive study. The study can also be evaluated in terms of its own particular design and ethical requirements, including sample size and construction, management of data security and use of technical tools.

In the introductory chapter, I set out the personal and professional issues that influenced my initial choice of research topic and culture of inquiry. As I pointed out there, my professional training and much of my professional experience has been in the field of social work. I have experience in using one-to-one interviews to help
people explore important concerns, and make sense of what has happened in their lives. I am in the target age range of the participants. I have attempted self-employment and my partner is an engineer who has changed working arrangements in his career and experienced the upsides and downsides of “flexible” work.

While it took considerable and sustained effort, I think I did master the art of not imposing my own assumptions, expectations and ideas between the words of the engineers and the themes constructed to present their words through the first reading. Given my background, this did not happen quickly or easily. My first efforts were full of attributions, assertions, generalisations and abstractions that I initially just wrote down without even realising what I was doing. Some of these were driven by theory I had absorbed or by my own mental models. But much of it was driven by my own need to analyse their possible intentions, motives, emotions and world views, in order to explain their words. It took considerable effort to break myself of this habit and simply try to present their words. This effort was required by the technical protocols of the particular culture of inquiry I chose: its assumptions about what knowledge is and how it is created. But it is also a requirement of the generic protocols for interpretive research described at the start of this section.

I have aimed to be transparent in my account of the research journey, the methods that it employed and the ways in which it evolved as a deliberately emergent process. That account includes the gradual development of my own sense-making processes and transparency about the bridges built between the words of the engineers (first reading), my own sense-making frameworks (second reading) and the theories that were brought to bear on both. The University’s processes for ethics approval, reporting and self-audit also require transparency of intent and practice, over the life of the project.

As I described in my account of the sense-making process, I think I really had the best of two approaches for constructing the second reading. My own laborious processes of reading and re-reading were combined with the systematic nature of the NVivo work. I was able to add memos about each code as it was introduced, keep a research log for
memos about coding of each transcript, and record annotations for insights and hunches. This method of combining manual coding and later stage coding in NVivo was employed by Vough et al. (2015) in their study of the retirement experiences of senior managers and executives in private industry.

In terms of my relationship with the participants, my social work background undoubtedly influenced the choice of position I took up in what Cunliffe and Karunanayake (2013) have called hyphen-spaces. The hyphen-space is the relationship created between researcher and participants and has several dimensions, including those of engagement, distance, power and control. What happens in this space has an influence on both how and what data are created in the interview. The concept of hyphen-spaces provides a useful framework for considering rapport-building and creating connections with participants. By sending out the questions in advance I also potentially mitigated the power imbalance that flows from the researcher’s positioning the focus of the inquiry and creating questions that, no matter how generative, reflect the agenda of the researcher. The participants too contributed to this space.

When providing the schedule of questions prior to the interview, I assured the participants that they would have plenty of opportunity to take the conversation to any other issues they considered important. At each interview the tone was relaxed and conversational. The questions were open-ended allowing participants the freedom to take their responses in directions that were relevant to them. In some interviews the participants took charge of the interview guide and ordering of questions. I also specifically asked toward the end of the interview whether there were any areas we had not covered that they wished to talk about.

I had been concerned when I realised that many of the interviews would take place via telephone. My experience had been that face-to-face interviewing is more comfortable and effective particularly because I value the ease of communication when I am able to see people’s facial expressions and use non-verbal cues. But as I began phone conversations I became more confident about this mode of interviewing. Sometimes people find it less confronting to talk openly when they are not seeing or being seen by
the other person. I also found that there were fewer distractions for me as the listener and I got totally absorbed in the person’s voice and their words. I had no other sources of information and had to listen very intently – particularly if the line was not high quality. The major difference for me from face to face interviewing was that I had to give more verbal cues or feedback so that people knew I was listening and the telephone connection was still active.

The construction of the sample itself needs some evaluation. The broader rationale for focusing on engineers has been presented in Chapter One but from a design perspective, I thought it was important to concentrate the study on a professionally homogeneous group, rather than spreading the sample thinly across more professions.

When it became clear that no women were volunteering for the project, I realised that this reflected the low representation of women in engineering and also – and in particular – their low representation in the generation I was interested in. While this might not be – and hopefully won’t be - an issue for future generations of researchers, the logistics of seeking out a comparable number of women in the time available became too difficult. It would almost certainly have meant trying to recruit women from other countries, which would in itself have altered the cultural setting of the sample. At the same time, settling for a small number of women in Australia to identify gender patterns in the responses seemed to compromise any serious comparative analysis.

The member checking process of sending a summary to each participant added some strength to the data set, for two reasons. One is a checking process: “taking data, analyses, interpretations, and conclusions back to the participants so that they can judge the accuracy and credibility of the account” (Creswell 2013, p. 252). The other was that the process, along with providing questions prior to the interview, extended the contact and possibility for communication with each participant well beyond the interview itself.
However, there are still questions with regard to what the sample actually represents. As in most ethical social research projects, participation is voluntary. So was there something distinctive about this group of volunteers compared with those who did not come forward? Bell (2013) and Oplatka (2007) are among those who discuss what a person’s readiness to be involved implies about them. I had certainly been curious about why the engineers had made the effort to participate, and had asked them directly at the end of the interview: “What prompted you to contribute to this research?” I had 34 responses that I subsequently grouped as personal interest in the topic, helping other older engineers plan their future pathways, and providing commentary on the broader implications for the profession. A very small number of responses lay outside these groups, including returning a favour to a colleague (word of mouth referral). It was not clear how the publicity and project information statement might have influenced the issues the engineers chose to speak about.

And I can only speculate about how different might be the responses from those engineers who did not take up the opportunity to contribute their experiences and perceptions of later working life. Perhaps the issues of mature practice development that emerged for the group of engineers in the sample have been resolved by many outside the sample or perhaps they believe they have resolved them. The picture is, by its very nature, confusing. For instance, an engineer who had not participated in the study initiated a conversation with me after he heard me speak to a group about my findings. He initially informed me that the experiences of the group of engineers did not resonate with him as he had reinvented himself and was enjoying retirement. But as our conversation developed, he talked about the different consultancy roles he had held, his work with international aid organisations and his voluntary work in the not-for-profit sector that used his high-level engineering skills and knowledge. He framed his continuing work as retirement interests that developed after his formal retirement from a career of organisational employment. Other engineers with the same experience might consider that they are working and not retired. As the constructivist interpretivist approach appreciates, experiences and language can be perceived differently and hold different meanings for different people and makes it difficult to
determine what a sample represents in terms of the bigger story. I can only aim to present a cogent picture of those who did choose to participate.

However, as well as the actual responses of the engineers themselves, I am able to draw on my own subjective impressions about this. And my impression is that the engineers made the choice and the effort to follow up the invitation, and that they mostly came with intent to talk about issues that matter to them at this stage of their working lives. I did not experience them as passive and acquiescent respondents showing up for an interview just to fulfil my research agenda to explore the phenomenon of late working life. Nearly all the interviews quickly became conversations focused both on the questions I asked and the issues they wanted to speak about. The opportunity to consider the core questions prior to the interview enabled them to think about their responses in advance. I thought most of them had things they wanted to say and participating in the research provided an avenue to share their thinking. Some explicitly expressed interest to learn how their experiences and perceptions related to those of others in the study. And some wanted to contribute something that would make a difference:

> I think deeply about these sorts of things all the time. That’s why when I saw your advertisement for feedback I thought ‘oh this is great. I want to tell somebody, you know, have it written down’ and if you can use it in your research that’s just fabulous. (#26Org)

Sometimes they expressed a sense of relief or validation that they had been heard and understood:

> I think that ... really profoundly affected me... yeah ... Now that I talk about it now, I think it did ... just find it offensive. Yes, I can say that to you! ... Oh this is good therapy, I’m enjoying this, just in time for the weekend. It is excellent. (#11Org)

> You get to the stage you get tired of dealing with bloody - sometimes malicious people ... There you go, I’m getting a lot of my chest! I don’t know if you’re getting any benefit! (#28SE)

> Thanks Alison, thanks for the opportunity. (#6Org)
The group of engineers who participated had the motivation and energy to talk about issues that mattered to them. And from my wider reading, the issues they raised for themselves also seem to epitomise issues that would be relevant to other mature practitioners in their own profession and potentially to other professions.

The next chapter of the thesis turns to presenting the first reading of the engineers’ words. My own evaluation of the study can thus be tested by the reader.
CHAPTER FOUR     DATA INTERPRETATION: FIRST READING

Introduction

The previous chapter described the culture of the inductive interpretive inquiry undertaken for this thesis, and the emergent processes of crafting the study’s design. It highlighted the importance of first presenting, in as much detail as feasible, the actual words participants used to discuss questions and issues covered during the interview conversations.

The presentation of these word texts as key artefacts is crucial for a number of reasons. Many interpretive research cultures value transparency and inclusiveness in presenting the voices and action of the people whose lives, practices and behaviours are explored through research. Some do this because they adopt a value base of respect for, and empowerment of, those who are marginalised in mainstream research discourses. Some do this from an ontological and epistemological base, reflecting a range of stances about the nature of truth, the ways in which human words and actions do or don’t constitute – or even represent – the world, and the ways in which human discourses are constituted by the social and physical world. Those who also take an inductive stance, as was the case in this study, try to avoid using theory or hypotheses to drive initial presentation and sense-making of texts.

Constructive interpretivists will not try to smooth out messiness such as inconsistencies and ambiguities in the texts their participants create or delete variations that occur within and across those texts. They will also be careful not to presume that a researcher can know the thoughts and feelings, motives, intentions and values of any particular individual whom they meet and talk with for only an hour or so.

For both these reasons, as noted in Chapter Three:

... regularity within the accounts of a single individual is less interesting than the regularity that exists in the elements used by different speakers to describe the same person, event, or thing (McKenzie 2005, p. 222).
But by the same token, the researcher will not force their participants’ accounts into neat collective categories just for the sake of it. Instead, the researcher first presents extended examples of the language and behaviour people actually use and enact to highlight variation, rather than hastening to present summaries or offering paraphrases of what people said or did.

For all or any of these reasons, the researcher’s own interpretations – whether undertaken analytically, intuitively or aesthetically – are clearly separated and distinguishable from the words of the participants themselves. It is important that researcher interpretations – sometimes called readings – are presented in ways that can be studied by others, who can make their own sense of the texts. They, in turn, can create, present, discuss and defend their own readings.

Consistent with these aspirations, I engaged in two different readings of the texts. This chapter presents the first reading, so it is focused on showing how the participants individually and collectively responded to the interview prompts in their own words. I tried to do this with a minimum of my own interpretation. As explained in Chapter Three, I acted as a curator in taking on the interpretive role of selecting which vignettes to include and how they would be grouped to do justice to the engineers’ words, both individually and collectively. But it was challenging to try to do justice to individual voices and at the same time gather and present patterns across the whole group. The need to maintain this balance is captured in the following very personal statement from one engineer:

What I’ve said so far is just all how I see myself, and about myself and my current situation and what I’ve done, things that I’ve done in the course of my career and how I would like to see my career ... I wouldn’t like to see the work finishing, but how I would see my career continuing, but probably tapering to a minimum. (#1Org)

My intention was to maintain a light touch. But in curating the textual material, I made selections that are likely to be different from those that another interpretive researcher might have chosen. The best I could do was to offer a transparent process
to the reader. With the aim of transparency in mind, this chapter includes many verbatim quotes.

I created six themes to encompass and group the range and diversity of responses from the engineers in our conversations, with the hope that these themes would be sufficiently distinctive to draw out different patterns, regularities and agreements in what people said. The themes are titled: changing meaning of work, future work intentions, being older in the workplace, passing on knowledge, de-engineering as a changing context, and meaning of retirement.

Even working inductively, four of the themes were not a surprise, relating directly to the interview questions. But two themes, passing on knowledge and de-engineering as a changing context, bring together statements and ideas that were initiated by the participants themselves.

**Theme: Changing meaning of work**

The participants’ words described the changing meaning of their work in a range of ways, with professional fulfilment and financial benefit mentioned by most. Their accounts also suggested that they saw the balance between these two things as shifting over their careers, with a growing emphasis on the rewards of a sense of fulfilment in their current phase of working life. One engineer related his experience of prostate cancer which had occurred when he was in a stressful leadership role, prompting his shift to self-employment a couple of years earlier. Now at the age of 66 he said he is looking at life differently: “you start thinking about how much longer you’re going to have good health, so there is that balance there”.

Most engineers said that an important priority now was the opportunity to do work that is interesting and challenging, that also provides a sense of purpose and opportunities to contribute. For example, a 70 year old self-employed engineer described it this way:
After a while I say I want to get back. I’ve still got all these things I want to do and I reckon I could make that better or... I guess that’s the ideal engineer, isn’t it? Make the world a better place. (#27SE)

Some participants also said that late career brings satisfaction from integrating the knowledge and skills developed over a long working life, enhancing their capacity to comprehend complex problems. Being recognised for this expertise has also become important. A 73 year old engineer appreciated his status as “the go-to person in my field”, while other engineers referred to the capacity to influence critical decision-making in their field of technical expertise. For instance:

The key value in coming to work is what I call judgement engineering. We are valued for our judgement skills - the judgement and authority which is vested in us... (#26Org)

This engineer used the word ‘authority’ eleven times in the interview. He described its significance in late career in this statement:

The authority represents a reflection of your status and the fact that you are recognised for your experience. And that’s an extremely valuable thing that I guess only older engineers would appreciate. (#26Org)

A 64 year old engineer described his current job as “probably one of the best career moves of my career”, saying that the value of his breadth of knowledge is recognised by others:

I’ve worked in so many different industries and in the public sector and the private sector. I’ve got a very broad picture in my head of all the projects and infrastructure in [this State]. And my historical knowledge is quite helpful to other people. (#10Org)

A heightened enjoyment and sense of fulfilment from mentoring relationships and passing on knowledge was mentioned by some. A 55 year old engineer in the public service, who said that he enjoyed his new mentoring role in the organisation’s graduate program, also said that up until 2 years ago he would not have been enthusiastic about the role. His reason was that mentoring would have seemed “too much touchy-feely HR stuff”. Yet now his attitude has changed:
I enjoy the technical aspects. But I also increasingly enjoy the more human aspects, the interactions with people, the psychology of it all and so on. I think that happens with age. (#15Org)

Another participant initially nominated his two main reasons for working as “intellectual stimulation” and “social interaction with colleagues”. He later said that it was his continuing sense of contribution and “adding value” to the organisation that had fuelled his enthusiasm for work to the point that he still “jumps out of bed in the morning”.

Only two participants said their sole motivation to remain working was financial. Yet even among those who expressed the view that income was less important now than earlier in life when they had families to support and mortgages to pay, financial security was still mentioned. Some said that they had experienced career disruptions through retrenchment and periods of unemployment which had detracted from their capacity to save for retirement. Some said that their need to build up superannuation and improve financial security had also restricted their options to transition out of full-time employment into part-time arrangements. The unknowns of personal longevity and volatile financial markets were mentioned by some as sources of uncertainty about whether they will be able to accumulate sufficient superannuation for a comfortable retirement. This 68 year old self-employed engineer refers to a recent dip in the markets and the global financial crisis, as well as his own longevity:

I think it’s a reasonable nest egg but it’s taken a hit in the last fortnight. And we are nearly back to where we were five years ago unfortunately. So how do you push that out for another ... I don’t know. And that’s another thing, you don’t know how long you’re going to live. I could be dead in two years, I might live for another 30, I don’t know... (#29SE)

Change in the meaning of work was often associated with changes that were taking place in organisational working environments. Among the 22 participants classified as salaried employees, 20 said that their careers had been disrupted or influenced by retrenchment or major restructures. Some who remained employed through multiple organisational restructures considered themselves to be “survivors” or “veterans”, who had sometimes reinvented themselves in new roles. One participant who had
worked for the same government organisation for over 20 years remarked that after many restructures “I am one of those old veterans still surviving”. Another participant who had spent the past 20 years of his career with the one employer in the public service, said that in the interview he would be “using the words ‘as of today’ because everything is very mobile here, you don’t know what’s going to happen tomorrow”. He summed up his ongoing employment:

I’ve survived all the restructures. So I’m glad that I must have contributed some things that somebody valued and kept me going. (#6Org)

Another engineer described the importance of adaptability and the capacity for reinvention to remain employed in his field:

We are survivors of many many restructurings and changes and things like that. So we’ve obviously learnt how to adapt and reinvent ourselves. And my personal journey is one of reinventing myself. (#26Org)

In some cases, the engineers said they had themselves deliberately sought out roles and working arrangements that would better match their changing priorities. For example, some participants who had held senior management and executive positions described how they had grown tired of the frustrations, stress and long hours their work entailed and had chosen to return to technical engineering roles in their organisation or to shift to self-employment. One engineer who had left a director’s role in local government to take up self-employment, spoke about his enthusiasm for the practical side of engineering and his frustration with his former management:

Others of us want to do engineering. That’s the profession we got into - to work with a slide rule, might go out and kick the dirt and wave our hands around and point and make things happen – not argue with people about things. (#28SE)

Twelve of the engineers were self-employed and their ages ranged from 55 to 77 years, with two-thirds aged 65 and over. The length of time in self-employment spanned from the recent establishment of a consultancy to nearly 30 years. The youngest age at the time of commencing self-employment was 41, the oldest 66. Six made the shift to self-employment following retrenchment, staff changes or other restructures in the organisation where they had been employed full-time. Some described themselves as consultants, others as independent contractors. Three used
the services of skill hire agencies to find and manage their contracts, which had the additional benefit of including professional indemnity and public liability insurance (or enabled them to pay a greatly reduced rate). All except one of these self-employed engineers was operating as a solo business.

Advantages of the shift to self-employment mentioned by the engineers included greater autonomy and freedom from the politics and stresses of organisational employment, more flexibility in terms of use of time and the capacity to be selective about what work to take on. Achievements were said to feel more satisfying because “you stand or fall by your own efforts” and some spoke of appreciating the freedom to offer independent professional advice which had been curtailed in their former salaried positions. A 63 year old engineer, who had resigned 15 years earlier from a senior management position in a municipal council following the appointment of a new CEO, spoke enthusiastically about the attractions of self-employment:

My time is a lot more my own. I don’t get tangled up in office politics, human resource management, HR issues and all that sort of stuff. I go in, do the job and go away. (#28SE)

He described the benefits of a more flexible use of his time to balance work and his other interests, even though his weekly hours were probably close to full-time or longer:

I probably feel semi-retired because I go for my swims. But when I’m away from home I work all the time. I’m probably still doing six hours a day when I’m home a lot of the time. But if I look out the window and see the lawn needs mowing I’ll go out and mow the lawn. (#28SE)

As well as flexibility around working arrangements, most self-employed engineers said they liked the potential of having more freedom to be selective about their work and to focus on what is most meaningful to them. However, being available was mentioned as being as important for a continuing workflow, which can constrain the potential benefits of flexibility and selectivity. For instance, taking extended holidays can be problematic, according to an engineer who has been self-employed for three years:
You feel like you have to take jobs when they come up, so you can’t really plan, you have to struggle with that. You end up taking a lot of short breaks rather than a longer break. And that’s probably not ideal. (#9SE)

Most of the engineers in self-employment reported overall satisfaction with their independent working lives and said they were enjoying the experience. Some encouraged others who wish to take the same path, but also said that not everyone is suited to the demands of self-employment because it requires other business skills such as marketing, networking and administration. An engineer who resigned 15 years ago from a government authority shortly before his 55th birthday said:

This is good. I wish I’d done it about four or five years earlier. Because I just didn’t realise how good it would be. Maybe I was lucky that I had the right contacts, I was in the right places, I was doing the right sort of work that other people didn’t have the expertise in. (#27SE)

Self-employment also requires a tolerance of uncertainty. The words of one self-employed engineer described what he thought it took to enjoy self-employment. He said he had learned to trust that sufficient work will come in to “keep the wolf from the door”:

I get to the stage where I’m thinking ‘I don’t know what I’m going to do next week’, and then someone will ring up and say ‘Can you do this for me?’... Sometimes I only get half what I’d like to be doing but I just find something else to do – mow the lawns, clean the backyard. (#28SE)

**Theme: Future work intentions**

This theme brings together the many statements the engineers made about why they want to continue working and about the opportunities, challenges and constraints they anticipate.

Nearly all the engineers in this study said they were keen to continue working. On the one hand, this is perhaps not surprising for the 17 engineers who were younger than 65 and currently in the workforce: all of them wished to continue working in the immediate future, and most to at least the age of 65. One set a target date of 60 to retire fully; two 55 year olds were considering full retirement in their early 60s but without a definite time frame; the others had no specific end date in mind. The
majority were interested to modify their work patterns in some way, particularly for more flexibility and selectivity, to improve the balance in their lives between work and other interests. There was only one engineer under 65 who was not in the workforce at the time of interview and he was becoming increasingly interested in returning to a part-time arrangement after a break of two years following retrenchment and ill health. But he said the work would have to be sufficiently interesting to entice him back:

If somebody rang me up and said they’ve got a mining job in the middle of nowhere, I’d be off like a shot. But if it’s a dreadful old sewerage treatment plant with lots of small pipes, I wouldn’t want to know. (#19Org)

On the other hand, nearly half of all the participants had already extended their working life beyond the traditional retirement age of 65. Six of these were actively working as self-employed engineers, six were full-time salaried employees, two were part-time employees, and two were not currently working, one of whom was unemployed and seeking work. Two of the full-time engineers who were in their 70s had recently been informed of their positions being made redundant.

The preference of nearly all of the engineers over the age of 65 was to extend their working lives further and no-one had set a specific date to exit the workforce. The oldest participant, who declared that 65 was too young to stop working, said he was struggling with the idea of leaving his business that has provided him with so much enjoyment:

For the last 25 or 30 years I’ve always considered it as working at my hobby. So that I don’t know what I’d do if I didn’t work. (#34SE)

The patterns of future work plans for the entire group of 34 were varied. Options that the salaried engineers said they were considering included continuing in their current arrangement, phasing to part-time employment or shifting from salaried employment to self-employment.

Working from home on a regular basis was a flexibility option mentioned by some full-time employees. Two had already implemented this arrangement successfully. They
said it had the benefit of reduced weekly travel time and provides a helpful transition out of the workforce to home-based life. Another pathway for proceeding through late career was to create or adapt roles to reduce stress and better suit changing interests, as this engineer with a chronic health condition stated:

I’d like to move away from deadlines type of work, where I’ve had to work long hours ... and away from the front line dealing with the customer and the stresses and strains associated with that. (#21Org)

However, few assessed part-time work as a feasible option and only two participants were employed part-time. Participants mentioned a range of constraints to part-time employment. These constraints included employers paying only “lip service” to such flexibility, employers expecting full-time performance while paying part-time salary, roles not suited to part-time arrangements, negative impacts on superannuation, and the requirement to shift to a lesser role that lacked interest and challenge. While most of the engineers mentioned possibilities and ideas for future pathways, few were specific about timing and action steps. But a range of issues were mentioned by the participants when discussing the future. A self-employed engineer said:

How long I will continue working is a moving line and quite an intriguing situation to consider. When I was young I planned to retire at 50 as a millionaire but that didn’t happen! Later I took into account that other people would think that you were too old to work past 65. But I continued past 65 and I see many other people my age who are still working. As age 65 went past I started to talk about retiring at 70, but now I am 68 I’m not so sure. At the back of my mind I do wonder when the client will think I’m too old and “a silly old bugger”. (#29SE)

Others spoke of wanting to avoid the experience of colleagues who had retired and then returned to the workforce because they were struggling financially.

Several statements referred to an ongoing need to review their financial planning:

I’ve done some working out of what we need, what we would need to have when I retire ... it’s not quite there yet. It’s not a specific number, it’s a range of numbers ... And what do we want to do when we retire? We don’t have answers, we’re engaging with them, and we’re discussing them, we’re looking at our options ... and sort of just planning a couple of years ahead. (#21Org)
And for some salaried employees, there was a perceived risk that if they left their current employer, either by choice or forced retrenchment, they would face shrinking opportunities for salaried employment as a result of possible staff cuts in government and corporate organisations, and changing patterns of service delivery such as outsourcing and offshoring. Some engineers mentioned the prospect of another restructure as something that would trigger them taking definitive action:

If he leaves ahead of me and they bring in somebody who wants to introduce revolution [organisational restructure] then I’ll bail out. Because I’ve seen it and it doesn’t work. (#18Org)

Shifting to self-employment was mentioned by some salaried engineers, who described it as a pathway into more flexible working arrangements and a means of extending their working life as long as mentally and physically possible. Only two said that they had specific plans to do it. A 64 year old engineer said he intended working a few more years full-time and then shifting to self-employment to retain his connection with the satisfactions of working as an engineer:

I look forward to a period of transition to retirement - I prefer to use those words. I suppose that would give me flexibility and freedom to take holidays and things, and do a little bit of my own thing on a short-term basis, but still come back to engineering work of some kind from time to time. (#10Org)

He said he was actively building his referral network and getting involved in professional associations that could build opportunities for work in the longer term. He said he had worked for himself in the past and understood what was required to succeed. Another engineer explained how he has actively planned to reinvent himself for a continued career in engineering. He said he had negotiated a part-time teaching role, which he envisaged combining with his own consultancy practice.

Those already in self-employment mostly said that their option was to continue indefinitely in their current mode, reducing their hours or becoming more selective about what work to accept

One 60 year old engineer facing retrenchment also expressed reservations about the option of self-employment:
And you pick up your life and you start a sort of gypsy or nomadic existence travelling to wherever the work is – and I’m not sure that I’m ready for this at this period of my life. (#14Org)

And the only unemployed engineer in the study said that after decades as a self-employed engineer and many experiences of precarious employment, his best advice to salaried engineers was:

Oh if you’ve got a permanent job – stick it out, unless you have something well organised. (#8SE)

Age discrimination in recruitment practices was also mentioned by some as being a concern in making future plans. The theme being older in the workplace takes up these concerns so that material is not repeated here.

Finally, some participants spoke of their own – or others’ future health as another unpredictable influence on their working lives. One engineer aged 70 explained that he doesn’t think too far ahead because anything can happen health-wise at his age. Another said that it was his wife’s ill health that impacted on his decisions about working life. He had taken a break of four years from the workforce in his mid 60s to care for his terminally ill wife. He did not return to full-time employment, instead setting up business as a consultant. Now, due to his deteriorating eyesight which is impacting on his ability to read design plans, he estimates that he will have to stop working within the next two years at age 75.

**Theme: Being older in the workplace**

For both organisational employees and those who were self-employed, being older in the workplace was mostly spoken about as bringing with it the benefits of being an experienced professional. In the case of self-employed engineers, phrases used were that clients associate “grey hair or no hair” with valuable experience and the capacity to “hit the ground running”:

Probably most of the knowledge I have, not much flusters me any more - it’s just a matter of getting on with it and fixing it. (#28SE)
I walk into the room and people are prepared to listen to me now. You know, I've got a few grey hairs. And if I can save them some pain, give them some value, pass the torch so to say, fantastic, because everybody wins. (#5SE)

Salaried engineers spoke of being sought out as a “go-to person” for their expertise, and as a valuable resource for corporate knowledge:

The advantage in my area of being old is that I’m highly regarded as a source of information, of stories and … background as to why things happened. (#7Org)

Other participants spoke of specific skills they have acquired, such as bringing experience and wisdom to strategic thinking and dealing with complex problems, communication and people-management. One said he knows “how to get things done and deal with people”.

Some said that the experience of being older and experienced includes being a mentor to younger engineers, which is something that is taken up in the theme passing on knowledge. At the same time, some engineers in self-employment and employed in consultancy companies said that being older can be an advantage if the clients themselves are older. They spoke of clients aged in their 40s and 50s who value having consultants who are of a mature age. Similarly, an engineer formerly employed by a consultancy company said that his senior managers would not have seen him as “old” because they were a similar age. He said that age was not perceived as relevant providing the work was getting done.

A few engineers said that combining mature experience with “youthful vigour” or young engineers’ know-how makes the most of what each generation has to offer. One 68 year old engineer brought the client work into the company and managed the overall project direction, while the younger engineers supplied the computer skills that were also needed:

The actual technology of the computer aided drafting and modelling and all that sort of thing. I don’t and won’t do that. So I rely on these young people to do all the fancy stuff on computer. (#13Org)
But not all the engineers spoke of positive experiences of this kind. One salaried engineer said that he had difficulty conveying the breadth and depth of his experience to commercially driven younger managers:

So that’s one of the most frustrating things I guess, and as I get older, particularly in this particular environment, that you can’t convey that you do have a range of skills and knowledge and wisdom that’s come from being more mature, been working for longer years – that they’re not taking advantage of. (#21Org)

A 63 year old self-employed engineer, who had been retrenched six years earlier, said:

These old characters, they’re not ready to throw on the scrapheap, they’re not past it. And in a lot of cases they have very very valuable contacts and information and knowledge that can actually improve things. (#2SE)

Another engineer in his mid 70s said of his workplace that: “they are getting rid of a lot of older people, even in their 60s and earlier, who are subject matter experts, who are well recognised experts ... one after another they have been shafted”. He had just been informed of his impending retrenchment following what he described as five years of being slowly “squeezed out of the sphere of influence”.

A 66 year old engineer employed in the government sector said:

There is a general feeling that if you are over 60 then you should retire and have a relaxed life – ‘so what the hell are you doing here?’ (#16Org)

Another government engineer distinguished between the positive attitudes of his team and immediate managers whom he said valued his experience, and the focus of upper levels of management on “budget efficiencies”. He said that upper management sees mature engineers as “stumbling blocks” and “not productivity gaining”.

A 60 year old local government engineer said that he doesn’t like being occasionally referred to as “the old bloke”, while a 68 year old said:

There’s a lot of respect, but in some ways there is no respect. But I think am big enough to understand that that’s the way it is and just got to put up with it. (#13Org)
As described in the previous theme, some salaried engineers said that they were very concerned that they would face difficulties in trying to find employment in later working life. Part of this concern, for some, was that young staff in human resources departments or recruitment agencies would not understand the value of technical knowledge and experience accrued over long careers.

Two self-employed engineers, aged 69 and 72, contracting to rural local government through skill hire agencies both said that their work offers have eased in the past year or two. But they were not certain whether this was due to their age, being selective about interesting work suitable to their level of experience, or external market conditions.

Health and physical changes associated with aging were also spoken about, with some describing declining physical capacities such as hearing, eyesight and agility affecting work capacities. One engineer said he no longer felt confident in inspecting bridge work. Another said that long and demanding days were more mentally fatiguing than earlier in his career. Two participants worried about the health impacts of the sedentary nature of computer-based jobs. In contrast, an engineer in his 70s said that, unlike manual labour, his specialist technical role is not physically demanding so he anticipates continuing to work as long as he remains in good health.

Keeping up with changing technology was mentioned as another challenge of late career by some. The careers of the engineers in this study had started in an era of slide rules and calculators and the very early days of computing but as some commented, throughout their careers their work has entailed learning about and adapting to new technology. But continual adaptation to changing modern technologies in the workplace was described as a struggle by some and as fascinating by others. For one engineer:

There’s a lot of investment in this field all over the world, there’s a lot of companies who take interest in developing new technologies to get an edge over their competitors. So, yes, the technology is changing and that’s quite exciting. (#16Org)
The words of the engineers in this study suggest that late career experiences can vary from organisation to organisation. One 62 year old participant, who was currently out of the workforce, said that he worked for five years with a large consultancy company following a career in local and state government. He said that he had not experienced any discrimination in the consultancy company. The managers valued his experience and “they wanted grey hair” and blended the skills of their different ages of engineers for the most efficient outcomes. In contrast, he said that age was likely to have been a factor in his earlier retrenchment from a state government organisation at age 55 and that the new positions following the restructure favoured younger engineers presumed to have a career ahead of them. However, he also said that in his employment experience in government, claims of age discrimination sometimes covered actual decline in productivity or performance. He said he could see a lack of “useful” performance by some long-serving engineers and yet “they’d think they were being discriminated against if they got made redundant”.

**Theme: Passing on knowledge**

Of the 34 participants, 22 referred to the desire to pass on knowledge in their current working life. Their comments about this were often offered in the context of their concerns about a bigger picture issue of the training of new generations of engineers, which many said had been compromised by broad structural changes that have taken place since the early careers of the participants. They counted themselves fortunate to have commenced their careers “at the coalface” in large engineering-based organisations such as government-owned utilities, the rail yards, the dockyards and manufacturing companies. They said that the loss of the practical “training incubators” had resulted in those experiences no longer being available to younger generations of engineers:

> They’ve all been outsourced. They’ve all got to turn a profit. So the training and development of the younger guys is minimal. (#15Org)

As well as expressing concern about future avenues for younger engineers to gain hands-on acquisition of knowledge and skills, many participants spoke about a loss of
corporate memory occurring through major organisational restructures, downsizing and retrenchments. An engineer with a 50 year engineering career said:

There’s been a lot of shedding of manpower, particularly at the older, oldest corporate memory level ... When you lose people who have got 20 and 30 years’ experience, you’re losing all that corporate memory. Yes they’re still bringing young people in but you can’t replace the 20 or 30 year veteran with somebody who’s recently graduated from uni. (#25Org)

Many engineers said that it was very important that they pass on knowledge to younger engineers in their workplaces or more broadly across the profession:

I just believe that as professionals we have a responsibility to pass on our knowledge to the younger generation, to the profession in general, the canon of knowledge. (#25Org)

A self-employed engineer said that he used opportunities when working alongside younger engineers to engage in knowledge transfer. He said he wanted to avoid the “waste” of his knowledge as a valuable resource:

I reckon there’s a fair bit of knowledge and understanding that I’ve got, and I didn’t just want to walk away and leave that. To me that’s sacrilege. I think it’s a complete waste of people’s knowledge and understanding to not tap into that and try and learn from it. (#27SE)

Some said they wanted to give to others the help they had received early in their careers from senior engineers in their organisations:

When I was young in the place, many senior engineers took the trouble to coach and teach me. And I’ve always been very grateful for that. And that’s why I try and do that myself for the younger people now. That’s a loyalty type thing. (#30Org)

However, many participants also said they wished to preserve corporate history or embed the advanced knowledge of expert engineers into corporate and government policy-making. To help ensure corporate history is passed on, some said they were involved in developing policies, preserving important historical documents, writing procedures manuals, making video recordings, along with preparing publications and making presentations to industry. In “telling the stories” in whatever way they could,
these participants said they wanted to protect or improve standards, regulations and work practices.

Few identified their specialist technical knowledge as a focus. Most said they were interested in helping others understand the complexities and realities of engineering work and the interrelated nature of technical decisions and the wider system. For example, some said they were keen to impart their understanding of processes and decision-making in the “grey areas” of engineering practice:

> There is no perfect answer: everything is a compromise. I mean there are some things that are black and white, and knowing when to recognise the black and white ones and when you can compromise is, I guess, a skill that you’ve got to learn. (#15Org)

They most commonly spoke about knowledge they had gained through practical experience. They used terms such as “on-the-job”, “hands-on practice”, “getting your hands dirty” to describe the nature of this knowledge. They said that such practice wisdom is in people’s heads and often involves intuitive judgement or acquiring “a feel” for what is right. Other areas of knowledge or wisdom they said they wanted to share included oral and written communication skills, negotiation skills, as well as personal and career development.

Some participants also spoke about sharing knowledge gained from “hard lessons of the past” to prevent tragic accidents and to influence their wider organisations and fields. In the words of one engineer:

> We should be involved in giving more feedback, on improving what we do from day to day, because we’ve made all the mistakes, gone down blind tracks and been the subject of crappy processes. (#3Org)

The participants suggested a diverse range of strategies for knowledge transfer. Mentoring, coaching, training, working alongside, education and teaching were terms that they used for passing on their knowledge on an individual basis or to groups. Of these, mentoring was the most frequently mentioned but it was a term that was loosely used to describe relationships that involve passing on professional knowledge and life wisdom to younger engineers. The participants also mentioned being seen as
“sounding boards” or advisors for others in their organisation, which enables them to pass on their knowledge of corporate history and their relevant expertise. One participant described a “thinker-in-residence” role for those in late career, a role he said he is particularly interested to develop in his final few years of employment:

people seeking out what’s your opinion on things, advisory role, reality check, thinker-in-residence type of thing. (#26Org)

However, the engineers said their desire to pass on knowledge did not always come to fruition. Only a small minority of participants said they had a recognised role in their workplaces to pass on knowledge, either to younger engineers or as part of corporate knowledge retention. Many spoke about the constraints to knowledge transfer. For instance, a self-employed engineer who had a long career in local government spoke about his disappointment with the lack of opportunities to mentor younger directors of engineering and chief executive officers in local government:

Oh, a waste that it’s been frustrating for a while and getting more frustrating that I’m not able to give to the communities the benefit of what’s in my brain and my knowledge and experience. (#23SE)

Others said they were frustrated by employers not looking ahead to nurture and retain younger engineers in the longer term, including by providing opportunities for formal mentoring by senior engineers. One self-employed engineer spoke of a time when he was engaged on a project which extended to two years and he had offered to provide mentoring to younger engineers in the organisation. However, management refused to include him in the program because he had not been contracted for the role. In contrast, though, two other self-employed engineers described situations where they had been able to mentor younger engineers who were working with them on projects.

Several participants speculated about employers’ resistance to supporting knowledge transfer. One mentioned an expectation that any needed skills could be bought in from elsewhere:
There doesn’t seem to be any sort of structure to formal mentoring, handing on. Employers don’t seem to want to pay for any of that. There still seems to be a view in the world that you can just go and hire expertise. If you can’t get it in Australia you just bring it from overseas. One of these days it won’t be there I think. (#29SE)

Two participants referred to cyclical changes in the provision of some of their organisation’s engineering services, which had been outsourced and were now shifting back in-house. But one of these said that rebuilding knowledge may not be immediately achievable:

The company decided years ago to sublet the expertise out to the suppliers. And now they’re saying that’s not the smarter way to go, we need to have some internal knowledge – but you don’t just get it like that. (#3Org)

For instance, corporate knowledge was described as being lost when there is no succession planning for knowledge transfer from departing engineers. One of the engineers who has been made redundant said he expects to “leave an empty desk” as the organisation has not planned for transfer of any of his knowledge; and if a need arises for his area of skills and knowledge, the work will be outsourced. Another suggested that those on the verge of retrenchment might not be well disposed to pass on their knowledge for the benefit of the organisation:

They may be made redundant at the very time they should be passing on ‘The Knowledge’ and they won’t pass it on because they’re all disgruntled, and there is no time to do it. (#7 Org)

One salaried engineer validated this speculation. Describing that he feels he has been sidelined by senior management’s “offensive” treatment of him, he said he has now lost his motivation to initiate passing on his knowledge:

I just don’t have anyone reporting to me and I don’t feel like I feel encouraged to do that sharing. So if someone asks me I will give them, but I won’t volunteer and say ‘look how about you do this’. (#11Org)

Another constraint to retaining corporate knowledge that some participants mentioned was that much engineering knowledge is held in people’s heads or is inaccessible in old paper-based files that have disappeared or are not part of current electronic filing systems. Others spoke of there being a further problem in the
prevalent attitude of younger engineers and managers that anything they wish to know can be found on the Internet – and if it isn’t there, it must not exist:

When I was young to acquire knowledge you actually had to be with other people. Whereas now if you want a bit of knowledge you can just Google it. But the young ones are tied to that technology. (#29SE)

Another engineer, who worked with machinery that is up to 50 years old, talked about the “inherent knowledge” that is important for their maintenance:

It’s not the sort of thing you can read in a book. And you can’t Google it. It’s in people’s minds or in old documents. It’s not new technology. (#13Org)

He also said that after the disaggregation of government-owned utilities, there was no systematic archiving or repository for important documents. Currently historical files are held in an array of warehouses and older engineers’ sheds and garages without a proper system for safe storage and indexing. Many old files have been destroyed (and continue to be) because people do not understand their significance.

Other constraints to imparting knowledge that were spoken of by participants included increased workloads and high turnover of staff. A self-employed engineer, who had been engaged in projects across several local councils for the past 15 years, observed that he was the one holding the corporate history because there is no continuity of staff within the councils for effective knowledge transfer.

Many of the engineers spoke about the implications of lost knowledge: inefficiency, spiralling costs and “reinventing the wheel”, as well as dramatic risks to public safety feature in some cases.

At the same time, at a more personal level, there is the sense of “disappointment” that one engineer says he would feel if none of his colleagues sought out his specialist knowledge after he left the organisation. He said he would interpret such silence as meaning that he “wasn’t considered as somebody that added value or had anything that was worth knowing”, which would diminish his sense of the importance of his contribution. Some participants suggested that the profession’s representative
associations should take a more active role in advancing knowledge transfer strategies. Suggestions included providing a range of structured programs for late career and retired engineers with time available to mentor younger engineers, as well as promoting to organisations the value of older engineers and their resource of knowledge.

**Theme: ‘De-engineering’ as a changing context**

The engineers’ remarks about what they described as the struggles of their profession in the current era have been grouped together in this theme.

Most participants identified what they saw as negative long-term impacts on the future of the engineering profession of systemic changes and volatility in the business and employment environment. According to some participants, swings in demand for engineers in line with changing economic activity have long-term consequences for the profession, with many qualified engineers leaving behind their technical skill base for management career paths or careers outside the profession. This phenomenon is described in the following words from an engineer who was retrenched from a management position in a declining area of manufacturing and returned to technical engineering but in another industry:

> You read the engineering press and the government statistics say that there’s half a million engineers or people who are qualified as engineers in the workplace, and about 150,000 of them actually working as engineers. And there’s some reflection about why.

> Well I can tell them why. Because the demand for engineers goes up and down in all industries - construction industry, mining industry, certainly manufacturing industry. It goes up and down and we’re not particularly well paid and people in the downturns get moved on and they thought ‘well why should I do that anymore, I’ll go and do something different’ and they do. Or they move up away from the technical streams into management where they feel more secure. So there are plenty of people in senior positions in private business that have got an engineering background but haven’t done any engineering for a long time. (#20Org)

They also commented on reduced numbers of engineers being employed in Australia due to restructures, retrenchment, privatisation, outsourcing and offshoring. Some
spoke of their concerns as to how Australia can continue to deliver efficient and safe infrastructure and innovative design solutions in a shrinking professional environment. Some participants said they were particularly worried because they believe that currently the government sector employs too few engineers to properly scope tenders and supervise major infrastructure projects, as outlined in this commentary:

Most engineers have got this extreme concern about lack of professional awareness of what it takes to develop a project and get it economically developed. Contractors are gleefully pricing themselves into work that is not properly organised and not properly planned. And we’re all paying for it... We now have a shortage of skilled engineers with the lifelong experience of getting works delivered on time and at minimal cost or below cost. (#4SE)

Another engineer, with a long career in the government sector, said that in his sector there was “an anti-engineering feel” contributing to a situation where “every agency is trying to minimise the number of engineers in the public service”. He said that engineers are seen as “money spenders” because they want to cost in safety margins to their project estimates, a practice that does not align with administrators’ “budget efficiencies”. Further, the quality of project outcomes is declining because of government outsourcing of engineering functions to private consultancy companies whose rationale is profit-making. He said that this situation has been exacerbated by Australian consultancy companies being “eaten up” by larger international consultancies.

Other engineers also spoke about what they perceive as the downgrading of the influence of engineers with technical expertise in organisations. One engineer in the local government sector said that he accepted that non-engineers can manage engineering functions effectively, but with the proviso that engineers have input to the decision-making, which he said is currently not the case:

Some of my contemporaries have a problem with a non-engineer directing engineers. I don’t have a problem with it at the higher levels. In fact, it’s a management function these days. There’s no question about that. So providing you’ve got a reasonable level of intelligence and inform yourself, you can manage. But there’s got to be engineering knowledge in there. And it’s not there. (#29SE)
From the outset of the interview, one engineer clearly signalled his intention to address the issue of what he called “de-engineering”:

In fact one of the things I wanted to talk about is the very serious de-engineering of the place that has been going on. (#30Org)

He went on to speak of the shift away from engineering expertise in the leadership and decision-making of his employer, a large engineering-based organisation in the government sector. He described the disempowerment of technical experts, including him, who are being “squeezed out of the sphere of influence”. According to his commentary, the top level managers lack engineering qualifications or have only limited technical experience yet still see it as their prerogative to make major technical decisions. But for him:

In technical decisions, the people that should be responsible for making those decisions are the people who are most expert in that particular area ... it starts with the technical decisions being made by the most competent people. (#30Org)

Aspects of what has been labelled here the de-engineering theme were linked in the engineers’ conversations to the statements collected together in the theme of passing on knowledge. According to many engineers in this study, both knowledge loss and devaluing of the engineering contribution is anticipated to have negative impacts on the quality of infrastructure, innovation and other engineering-dependent goods and services in Australia. For instance, waste and inefficiency can be the consequence of lost corporate knowledge when businesses “reinvent” what is already known, as these comments about local government describe:

They work very hard reinventing the wheel. They look like they’re doing things – and they are doing things because the Council’s got no memory of it. And they’re saying ‘oh we’re doing this and we’re doing that’. And I say ‘oh that was done before and before that it was done before then’. I say ‘you’ve been here, the engine’s running but the wheels are spinning. You’re not going anywhere.’ (#28SE)

Some participants also spoke about possible risks to public safety and workers’ safety when knowledge is lost from engineering-based organisations and when people without the requisite level of knowledge perform the operations. Two engineers with
specialist expertise in mechanical engineering related stories of underqualified people attempting to perform maintenance inspections or risk assessments that used to be done by engineers with advanced skills and knowledge. The following comments about risk assessment developed out of a conversation about major accidents and fatalities that can occur when proper processes are not followed and engineers find themselves “in the gun” explaining their actions to a Coroner:

A lot of the risk assessments are now done by people who don’t know too much about the job, it’s just a paper exercise. And they really miss a lot of things. People then rely on those risk assessments, but they’re done by people who don’t really understand the job … They don’t know about it until something goes bad. (#13Org)

**Theme: Meaning of retirement**

The word ‘retirement’ was not used in the interview questions: neither in the list sent to participants beforehand nor in the core questions asked at interview. However, the word was used by the engineers themselves.

Retirement was spoken about in different ways and referred to sometimes as the event of leaving work and sometimes as the period of life beyond work. Retirement could refer to leaving an organisation, leaving full-time work, leaving all paid work, no longer working as an engineer, no longer being paid a salary, or receiving the age pension. People talked about moving in and out of paid work, taking a break, phasing down, working in retirement, working in a voluntary capacity, working on their farms, and the challenges of no longer having a defined retirement age. A late career shift from an organisational career to self-employment was described as a changing form of work and as an act of retirement.

Retirement was also spoken about as something that could be determined at a specific point in time by others or by oneself, and as something that could present itself gradually or by default. In the words of one self-employed engineer, “if there is no work then I am retired” although that would not preclude him working again if more opportunities arose. Another engineer, who was 68 at the time of interview, initially stated he had left the paid workforce 12 months ago. On further consideration, he said
it was two years since he had last worked. He remained on the books of engineering employment agencies but had not been offered any work of interest in the past two years. He had made no conscious decision to stop work and retirement evolved by the circumstance of a lack of any “serious job offers” that were sufficiently well remunerated or interesting. He described his work status as “in retirement mode” on the basis that he did not see himself returning to engineering unless something interesting was offered. This experience of retiring differed from the formal retirement from his full-time career position ten years earlier, at which point he commenced self-employment. He spoke of both these experiences as being retirement.

Another participant, who had been retrenched two years earlier at age 60, spoke of being retired, semi-retired and taking a temporary break from the workforce. His described his exit from the workforce in this way:

I just wanted to chuck in the towel. I couldn’t stand it sitting at a computer all day... And I knew there wasn’t much work around. I thought I’d give it a rest for a while and wait for it to pick up. It’s just starting to pick up a little, but not much. (#19Org)

A small number of engineers spoke about retirement in positive terms. One said that he had already made a long and gradual transition to a satisfying farming life. Another, a 57 year old salaried engineer, who saw no incentive to work past 60 because of the terms of his “gold-plated” defined benefit superannuation scheme, said he had already developed high level skills for a number of stimulating leisure interests and feels confident that he will reinvent himself. And a 61 year old salaried engineer explained the meaning of retirement as “doing something with your life that you want to do and without having to worry about that you’ve got bills to pay”. His plan was to set up his own business in a non-engineering field that would use many of his professional skills and provide mental stimulation and flexible hours.

However, for nearly all the engineers who spoke about retirement, the language they used was negative. Even two participants who were still employed full-time and said they were looking forward to their retirement used the words trouble and problem:
I don’t think we’re going to have any trouble slotting into retirement. We’ve investigated it and thought about it fully to make sure that we both have our time and space and do our own things at home, but we work pretty well together. (#17Org)

I personally don’t think it’s going to be a problem because I’ve got so many projects and plans and things I want to do outside of work. (#26Org)

Some participants spoke about a likely loss of influence and authority, of professional engagement, as well as loss of income:

A lot less money and less opportunity to travel. Withdrawing from the international scene, withdrawing from the national scene. I will no longer have the voice that my position gives me. (#7Org)

Others anticipated loss of social camaraderie in a future home-based life:

The biggest problem will be going from talking to 60 people a day to talking to the cat ... You’re walking away from a social village to your own peace and quiet”. (#3Org)

Several said that they continue to work because they do not know what else would be satisfying. For instance, a 70 year old self-employed engineer said he continued to work because he was “frightened”:

It springs to mind that you are basically going to stop what you have been doing but don’t know what you would do. And maybe that’s why I keep on working – apart from being passionate and interested, maybe I’m frightened of just falling into a hole. (#27SE)

Another self-employed engineer, working full-time in his late 70s and a business owner with employees, spoke of retirement as “abdication”. He identified the “dilemma” that he has no interests beyond his work and is at loss to know what else he could do with his time.

I don’t know. I hate gardening, so ... you can only watch so much telly ... yes, I don’t know, I don’t know what I’d do. That’s why I’m still here I suppose. (#34SE)

According to a 70 year old who was close to deciding to retire from his full-time role in a government position, the challenge was to find purposeful life interests beyond hobbies to maintain a valued sense of self:
In my analysis of people who go out thinking hobbies will sustain you in your retirement, that doesn’t seem to be the case. You still seem to need something that preserves your worth. A sense of worth and a sense of purpose appear to be essential. (#7Org)

Fear of financial insecurity or uncertainty about whether they would have enough money to last their retirement years, was mentioned by nearly a quarter of the participants:

I don’t have all that much superannuation, so a bit of fear and trepidation stepping off this wonderful environment into something I don’t know. (#7Org)

The unknowns of their personal longevity and future volatile events in financial markets like the GFC were mentioned by some of these participants as concerns.

A 55 year old engineer establishing an innovative engineering-related venture spoke about his fear of being sidelined from the mainstream of life that professional work connects him with. Like the use of the phrase stepping off, his use of words was vivid:

Oh, I just shuddered, it’s all over red rover. I mean ‘no thank you’. There may be a different sense of the word. At the present I would see that as a closing of the gate, being put out to pasture. The particular word doesn’t hold positive connotations for me at the present. And that may be simply where I am in life. I see too many other things on the horizon and that I can put my hand out and touch. Retirement is below the horizon, eventually it will come knocking and I will come to terms with it when it is necessary. (#5SE)

A 66 year old participant described his understanding of retirement as a pressure from society to withdraw:

With age I feel that society as a whole has a tendency of saying ‘oh you are old. So relax, you don’t have to be in the mainstream’... In short, rejection. (#16Org)

He said he intended to resist the pressure to step aside from life:

... so that retirement means not retire from life but retire from work - not retire from work but retire from [this organisation]. Because otherwise retirement to me means the end of everything. (#16Org)
To make his retirement worthwhile he said he wanted to continue contributing his expertise in voluntary roles, but said that the worth of his contribution is likely to be “ignored”. Another participant agreed:

I think a lot of older people go into retirement and believe they can contribute a lot, but the society doesn’t value them. (#21Org)

He suggested that if we adopted traditional cultures’ respect for the elders, retirement could become a life stage when people can contribute their wisdom.

**Concluding comment**

This chapter has presented a first level reading of the transcripts of the interview conversations, trying to stay with the words used by the engineers themselves. The grouping of their statements into the six themes was intended to provide enough structure to hold the patterns or regularities across the whole group, while also providing the space for a range of individual voices. Each theme was meant to be distinctive enough to be useful but in practice there are many overlaps and connections. Conversation is a dynamic and evolving interaction that creates its own connections and these groupings were certainly not offered by engineers as they talked.

By minimising conceptual summaries and commentaries from the researcher, and being as transparent as possible about what the engineers said, it is hoped that readers of this work will not only have the chance to form their own interpretive views, but to track the next layers of sense-making I undertook in the thesis work. The next two chapters offer the conceptual analysis I created in my second reading, which was based on the text presented in this chapter, while Chapters Seven and Eight use theory to critique and extend my own sense-making.
CHAPTER FIVE  SECOND READING: MOTIFS 1 AND 2

Introduction

The previous chapter presented my first reading of the texts created through my conversations with the participating engineers. Six themes were used to group and present the words of the engineers. The intention was to curate what they had said, with minimal overlays of interpretation that came from my own thinking.

As described in the Methods Chapter (Chapter Three) in these two chapters I take a step back and present the sense that I made of their words as I reflected on the six themes that were used to portray their words. This second reading is of course only one way of understanding the words of the engineers. In the spirit of the culture of interpretive inquiry, I cannot pretend to ‘know’ the thinking of any individual engineer. Even pragmatically, there is not much I can claim to know on the basis of a one-off meeting. I cannot claim to have uncovered the essence of what they wanted to say, or even their experiences and behaviours. I cannot pretend to know or to understand what their intentions, feelings, thoughts or aspirations actually are. But I can have some confidence when different people seem to be saying similar things.

This chapter presents two of the four motifs that I developed as a framework to represent my own interpretive work. These motifs are the product of my own interpretive work and provide a framework for me to present my second reading. The first two motifs are being a mature engineer and becoming an elder. The other two motifs are indignation and stepping off. These are presented in the next chapter. Each motif has a number of dimensions that are indicated through sub-headings.

At the end of the presentation of each motif I also list the questions which arose for me as I wrote about the motif and reflected on that writing. In total, 16 questions were developed. These became important bridges for linking my interpretive work with the literature in Chapters Seven and Eight.
Motif: Being a mature engineer

In this first motif I describe the participants as mature practitioners on account of the stage of life and career they have reached. Their professional maturity comes from their long careers that span three, four or five decades in which time they have acquired years of experience, breadth and depth of knowledge, along with a capacity for judgement or practice wisdom. And their expertise and practice wisdom have been acquired in an era of great changes in the workforce and in wider political, social and economic life, through which their careers might have already encountered a number of twists and turns. Work shows up as central to their adult lives and careers and, at the time of our interviews, continued to be central for most. The way they talked about their chosen profession of engineering suggests a strong attachment to their profession, as well as an awareness of a changing status in late career as mature engineers.

The careers of the participants have taken them through a series of experiences as they gained life skills and professional knowledge, became more expert in their fields of professional activity and dealt with challenges. And they continue to engage with the challenges, obstacles, accomplishments and potentially shifting terrain in their mature years. As I heard, read and reread the words they used when talking about their working lives, I concluded that for most, the meaning of work has changed over the course of their careers reflecting different priorities and sources of fulfilment, as well as changed perspectives and professional roles. Expressions such as “mature engineers”, “older engineers” and “veterans” appeared in their accounts, which suggested to me that they have taken on the status of mature practitioners in the engineering profession.

The value of mature experience

To be a mature engineer requires not just theoretical knowledge, but experience in action. The engineers in this study had commenced their careers in a period when, in the words of one engineer, “the great training facilities of the dockyards, the state railways, the electricity commissions, which were all either State or Federal
government places [provided] great training incubators” for young engineers. The practical experience from those early years in such rich engineering environments led into long careers advancing their experience, knowledge and wisdom. As mature engineers they can now convert past experience into value for the present and the future. I interpreted their words as expressing desires for ongoing influence and impact in their work, with worthwhile outcomes from their efforts. As described in the theme of changing meaning of work, some participants spoke of the importance they place on the authority of their practice wisdom and being recognised for their judgement skills and advanced expertise. I read a strong sense of confidence in the level of competence they had achieved in their field by this stage of their careers. Satisfaction could come from respect as a “go-to person”, a “sounding board” or as someone who can “add value to other people”. And for one technical specialist, the bestowal of Fellow of The Institution of Engineers Australia represented recognition and honouring of a dedicated career.

However, it seemed to me that recognition of their competence was not always forthcoming in their organisations. I formed the impression that for some participants an underlying motive for talking to me about their experience and acknowledged competence was to establish their status as credible commentators or expert witnesses for this study. I thought they were telling me, as the researcher, that they have authority from their experience in their field and that their opinions are valid and worth being heard, not only on the topic of late career but also the broader context in which the profession operates. The following participant, after outlining his long engineering career, spoke about the justification for his status as a technical expert and a worthy commentator on the state of affairs for engineers:

There is a mix of management roles and technical roles. But in later years I’ve become regarded as a technical expert or a subject matter expert in those areas. And in that sense I’ve been used a lot in investigations of difficult or tricky or important incidents. I’ve also been used in the legal area in several court cases as an expert witness and helping prepare for a lot of other court cases, so that’s sort of evidence of being regarded as a subject matter expert around the country and to some extent internationally. (#30Org)
Another engineer told me that a colleague had given him the accolade of being “an engineer’s engineer”. His storytelling creates a vivid picture of him putting his advanced experience and knowledge into action to overcome the crises that his clients are struggling with:

I did some work about six weeks ago and oh, disaster. The safety regulator gets involved and everybody gets all excited and they said ‘what happened?’ And I went down and had a look and I said ‘you’ve done this this and this to it haven’t you?’ So we finished up pulling off all the bits they’d added on and suddenly it all started working as it should have done. And all of that, a lot of this sort of stuff, Alison, is things you can’t learn out of a book. It’s information that you pick up over a long career and you look at how you can apply it. (#2SE)

And for the engineers who participated in the study, being a mature engineer appeared to me to entail working with integrity to a high standard of professional values and ethics, especially to make a worthwhile contribution “to make the world a better place”. The motivations for their work, as well as for their participation in the research, appeared to me to be grounded in their professional values, convictions and passions. For most of the engineers in this study, it seemed a sense of contribution figured as important to the purpose and satisfaction of their working lives. Some were engaged in struggles to protect the public from inefficiencies and rorting of government contracts and from shedding of engineering expertise that maintains safe and quality services. One engineer drew on the famous words of former US president, John F Kennedy, to express his sense of inspiration for a higher purpose of contribution:

I’m probably a bit more of the JFK mould you know – what was it, think not what your country can do for you but what you can do for your country – there is probably a bit of that in me. You know, I’m here to work and provided it doesn’t destroy my life I’m happy to keep putting in. (#18Org)

Another participant said he enacts his values by using his experience and being a voice for the marginalised sectors of public interest. His rationale for his offer to be interviewed is to “make regional Australia visible – that’s my act”. His story contrasts city-centric policies, programs and budgets with “second class” rural and regional areas. He tells me of his efforts to “twist the arms of the policy makers” to adapt policies to better meet regional needs.
The sense of a professional self might significantly change in late career. Some spoke about how they have taken on particular roles because they perceive themselves as holders of “the knowledge” or corporate memory from their long careers in the same field or organisation. In some cases their words seemed to reveal concern about seeing themselves as the last in the line, with no successors to protect public interest and safety after they depart. The role of elders and knowledge custodians is included later in this chapter.

Another significant change in the meaning of work seemed to be a shift in priorities to reflect a clearer understanding of what they now consider to be most important in their lives. Towards the end of our interview one engineer talked about how he now places a high value on the quality of relationships and he expects others in his age group would feel the same way:

> What does my work mean at this time of life? Yeah, time to value what’s important, right? And I guess as you get older and you look back over your life and some of the friends that you lost and things that have happened, and it makes you realise what is important to you. I could say it’s not that many years ago that I used to think that going out for a coffee was just an excuse to get out of work. But these days I value having a coffee with work colleagues or friends. (#18)

**Survivors**

As mature engineers in late career, the participants in this study have all devoted at least 30 years to work in their profession. For those in their mid 70s, the length of time extends upward of 50 years. To reach this stage of career, their unfolding stories seemed to me to include a capacity for survival in the face of setbacks and other challenges. When they began their careers, the typical career path for an engineer was to progress through hierarchical levels in government or a large company. They have survived in the profession in the wake of upheavals from corporatisation, privatisation, outsourcing, retrenchment, restructuring, takeovers, shrinking budgets, contract terminations and the demise of companies and industries. They have reinvented their professional selves in new organisational roles and in their own businesses. Some have migrated from other countries, an experience that entails its own struggles of adjustment and belonging. For me, the stories of survival illustrate resilience in the
face of diverse professional and personal challenges and also point to the importance of maintaining an awareness of professional selfhood through changing work experiences.

A small number of engineers in the study have been employed by the same organisation for their whole career or at least the past 20 years. But their organisations have undergone multiple restructures in that time. One engineer, #26Org, recounts his “survival techniques” in response to the changing fortunes of his career when his employing organisation metamorphosed from public sector to private sector. In his late 50s, he is now feeling like an “old Gallipoli veteran” as his peer group gradually retire until eventually “there’s going to be just one marching in the Anzac Day march”.

Another story of survival comes from a veteran of more than 25 years in the government sector. In the interview he used the expression “as of today”. This seemed to me to encapsulate his frustration at the disruptive state of flux of his working environment where “everything is very mobile, you don’t know what’s going to happen tomorrow”. He has experienced oscillations between centralisation and decentralisation of his government department, along with other reorganisations because “they restructure, remerge, realign”. While he appeared to be resigned to these changes, he conveyed to me deep frustration with the ever-reducing budgets that constrain his capacity to fulfil his engineering role. Through all these changes, he continued to adapt and reorganise his priorities.

Reflecting on these stories of adversity and survival, I was struck by their resilience and the strength of their commitment to their work for more than just a financial incentive. There seemed to me to be an essence to their work that apparently continues to inspire them, reflected to me as a sense of fulfilment from exercising judgement and its associated authority, protecting public safety, mentoring the new generation of engineers, contributing to the improvement of people’s quality of life or making the world a better place. A few participants, however, appeared to have lost their energy and enthusiasm after being marginalised by unappreciative employers, an outcome that I return to in the story of indignation.
Another experience of professional survival came from those participants who have decided to go it alone in self-employment, which featured in the previous chapter’s themes of changing meaning of work and future work intentions. One third of the participants had made a shift to self-employment after earlier organisational employment, and another participant had spent most of his entrepreneurial career in self-employment. Triggers for the shift included redundancy, exasperation with their employment experience and decisions to leave early by choice rather than later by compulsion after organisational restructures or difficulties with a new executive leader. While some would have preferred to continue as salaried engineers but perceived their age as a barrier to employment, others appeared to approach their new professional life with a sense of adventure and excitement about the possibilities for life ahead. Indeed, some self-employed engineers conveyed for me a spirit of thriving – not just surviving – as they transformed themselves into more entrepreneurial engineers.

“A bit of an adventure” is how a 59 year old independent contractor described his three years of interesting and challenging work in self-employment. He talked about the satisfaction of identifying a greater depth and range of skills than he had realised he possessed and about his enjoyment of returning to his engineering expertise after several years in a senior management position. This review of his professional knowledge base and his strengths seemed to act as a boost to the sense of a competent self after unexpectedly getting caught up in a round of staff cuts. He also related anecdotes about the satisfaction he gained from his continuing contributions to local councils, communities and younger professionals. He decided to share his experiences to encourage other engineers who find themselves unemployed in later working life to be proactive about creating a new future. For him, survival is possible after becoming unemployed.

His optimism about new pathways after unemployment, however, was tempered by awareness that flexibility and higher rates of remuneration come at a cost. While he has more freedom in his week because he can earn in three days what he used to earn in a week, no work means no income. As another engineer said to me, “it’s always a
struggle, there’s always uncertainties about it”. While a couple of other participants enthusiastically extolled the benefits and liberation of self-employment, survival through self-employment may not be the ideal work arrangement for everyone.

One participant, who defined himself as currently unemployed, had decades as a self-employed engineer with a series of long-term contracts, along with a failed business venture. These experiences have left him feeling in later career that “I’ve been through the mill a few times”. This is the second time he has “struggled” to find work in his career, but now he is in his mid 60s instead of his early 40s. At the time of our interview he was still hopeful of securing a job or a contract, but thought that his age and loss of referral networks were likely constraining his chances.

A different kind of survival emerged for me through the migration stories of four participants, all of whom had established their engineering careers at the time of migrating to Australia. The youngest had migrated 10 years ago when he was in his mid-40s and the other three participants had migrated more than 20 years ago and were now aged in their 60s. They had secured engineering positions in Australia either prior to migration or shortly after arrival. The four participants, all from non-English speaking countries, chose to raise their migration experiences voluntarily.

As I closely read their words, I thought that they conveyed a growing sense of belonging, pride in their continuing engineering careers and professional achievements, and satisfaction that their risk-taking eventually brought successes. They had enjoyed their careers in Australia, even if stressful and frustrating at times, and were survivors in a changing engineering world. They all spoke of continuing to look for ways to contribute to their communities in Australia or the wider world, whether as paid professionals or volunteers.

I paid particular attention to what I read as “journey” from “outsider” to the “mainstream”, much of which they experienced through their workplaces. Work as engineers in Australia – either in major cities or in regional Australia – required them to understand and adapt to a different culture. Outsider status might not disappear
entirely. For instance, one participant has learnt that his Australian colleagues do not welcome any advice that is based on his experience of working in other countries. Another participant expressed his curiosity about “how a migrant ultimately gets into the society and into the mainstream of life”. His narrative prompted me to reflect on the significance of shifts along a continuum of belonging and to interpret the potential meaning of #12Org’s motivation to contribute to the study so he could be “part of the show”. There are many ways of being included and respected in the journey from outsider to mainstream and #12Org related how he continues to adapt and engage in new experiences and activities in his professional and personal life. I hear pride in his voice when he tells me about his “courage” to step into the unknown to participate in an interview and tell his story to a PhD student. His story can then become part of the show.

These glimpses of what I think of as migration stories have also helped me make sense of different emphases that these engineers expressed in their narratives. For instance, the youngest participant said that work-family balance was a continual challenge for him. Increased workload has eroded his “cherished” weekends with his family and friends. His thinking about retirement focuses on quality time with his family and an attraction of “tapering” to full retirement would be an increase in family time while continuing engage in his enjoyment of engineering work. Of all the participants in the study, he gave greatest prominence to the importance of family. He said he understood he was taking a risk to move the family to Australia and ten years on, he expressed pride and relief that the “gamble” and “heartache” have paid off and his successful career as an engineer has provided the avenue to make the “luck” possible.

**Questions emerging through my second reading**

After crafting my own understanding of the engineers’ words, I was left with a number of stimulating questions. These questions seemed to me to open up further avenues for inquiry. They were:

**Question 1.** What fuels the changing sources of work meaning for these engineers as mature practitioners in later career?
CHAPTER FIVE

Question 2. How do individuals negotiate the terrain of their attachment to work when their sense of self as a mature practitioner is not recognised or valued by others?

Question 3. What is the importance of a sense of belonging for mature professional practice?

Question 4. How can we understand the desire for continuing influence and impact in late career?

I should stress again that these questions are expressed in language and evoke concepts that were not offered by the engineers themselves. But nor were they questions that were in my mind prior to the first and second readings. The questions reflect a continuing development of my own inductive and interpretive work.

**Motif: Becoming elders**

The most powerful collective motif that formed in my mind through my readings of the data connects with what I heard to be the strong desire of most of these engineers to pass on knowledge and wisdom. I presented *passing on knowledge* as a theme in the previous chapter, and here I rework the theme into a further layer of interpretation as a motif involving maturing of the professional practitioner.

For me, the engineers often expressed a passionate sense of both urge and urgency about the importance of preserving their knowledge for posterity, whether by transferring practice wisdom to the next generation of engineers, or through embedding corporate history in their organisations, industries and the profession. One of the oldest engineers in the study said that such preservation of knowledge was “quite a suitable role for a person of my age and expertise”, suggesting a role of respected elders as a professional responsibility in late career. It is a role in the present that connects the past to the future and enables them to leave a legacy as well as feel a sense of ongoing influence and impact from their working lives.
But the potential of the role might not come to fruition if there is no value placed on the engineering contribution or the future worth of their knowledge and expertise. Although they have accumulated a wealth of knowledge throughout their career, the world has changed during that time and their knowledge might no longer be recognised by others as still relevant. A sense of poignancy emerged for me in a scenario where no-one is interested in what they and other long-serving practitioners believe they have to offer to the future.

**Knowledge custodians**

My strong sense was that the engineers I interviewed had accumulated a wealth of experience throughout the course of long careers, and that engineering knowledge and practice wisdom interests them. They find it satisfying to integrate and apply their diverse knowledge and skills in the challenges of complex environments that they operate in. Overwhelmingly they value the knowledge and skills they have acquired and most spoke of their desire to share their knowledge or wisdom to benefit others, whether that be younger engineers, employers, clients or the wider community. They spoke of being or wishing to become a mentor, advisor, guide, “sounding board” or, as expressed evocatively by one engineer, a “thinker-in-residence”. They are also the “custodians” of a career’s worth of knowledge that can be used and shared in many ways. The notion of knowledge custodians brought to my mind the role of elders in indigenous cultures who carry the responsibility for generational transfer of knowledge and wisdom. Indeed, another participant reflected on the valued contribution of elders in traditional tribal cultures and that western society would benefit from creating elder roles for people who have retired and have wisdom to offer others.

As I closely read the engineers’ words about the meaning of work for them in this phase of their careers and how those meanings may have changed in more recent years, I was struck by their strong desire to pass on their knowledge. Not only do they believe that their knowledge is needed for the present, but they perceive they hold knowledge that is valuable for the future. With some, I heard and read a strong urgency about the dwindling time left for them to pass on their knowledge. In
CHAPTER FIVE

representing their stories of working life to me, I did not get the impression that they are resting on the laurels of past achievements. Instead, it was my understanding that they hope that their influence and impact will continue into the future to make their work worthwhile.

One of the most evocative stories that highlighted for me the urgency of passing on knowledge was told by a participant in his early 70s who is preparing his exit from full-time employment. His was not a story of mentoring but of ensuring the retention of critical safety knowledge for the industry through “telling the stories” and documentation. The knowledge transfer process relies heavily on his long corporate memory and has become increasingly urgent as experienced personnel leave the industry. For him, an advantage of being older is that he is “highly regarded as a source of information, of stories and background as to why things happened”. His reason for contributing to the research connected closely to his concern about the imminent threat of lost knowledge through staff turnover and large-scale retirement:

I’m interested in the preservation of knowledge which is retained in knowledge workers, and in the whole conundrum of companies flushing out of workers with the knowledge, and shortly after not being able to do their job properly. We can’t go to the moon because all the people with ‘The Knowledge’ were flushed out of NASA, because ‘The Knowledge’, the intricate know-how, is not always and never can be always contained in manuals and procedures. And I want to engage in any kind of survey that will promote the retention of people with ‘The Knowledge’. (#7Org)

I listened to many more stories from participants who talked about their frustration (my interpretation) that critical knowledge is at risk of being lost – or has already been lost - through continuing cycles of organisational restructures, staff turnover and the exodus from the workforce of older engineers with the depth and breadth of practical experience. The role of mature engineers as knowledge custodians becomes problematic when organisations do not provide opportunities for mentoring or for younger engineers to work alongside senior engineers and the onus for professional development shifts from organisations to individuals themselves. Likewise, mature engineers might lack time or structures to document corporate history and their practice wisdom for future access. The disconcerting prospect loomed for many
participants that when they retire or are retrenched then their knowledge could “go out the door” with them, which I interpreted as wasting a resource and devaluing their professional worth. By the time I had interviewed all the participants, my mind was full of images of impending loss.

As mentioned in the theme of passing on knowledge in the previous chapter, decades of huge organisational restructures in #13Org’s industry have resulted in loss of access to corporate history. And he also recounted that many older and retired engineers have been storing historical documents in their sheds and garages because an archival system does not exist in the industry. A business leader in his industry has called on engineers with a lifetime of experience in the industry to stem the continuing loss of important knowledge:

He’d noticed they’re forever reinventing the wheel. They’re coming up trying to solve problems that have already been solved before, and nobody knows where the answer is. It’s there somewhere in the files or it’s in the records somewhere but nobody knows where it is. And he wants access to the information you can’t find in Google […] it’s just sitting there in somebody’s filing cabinet somewhere or somewhere like that. (#13Org)

The same engineer described his experience of how precarious the preservation of historical engineering documentation can be:

I had a bloke once going through a file, skimmed the file, cleaned the files out just throwing out scrappy paper, not looking at what was written on it, but just something that didn’t look neat. (#13Org)

A different angle on wasted knowledge emerged in the words of another engineer who was struggling with the commercial orientation of younger managers who do not appreciate what the older engineers in the company have to offer. His words suggested to me that engineers may not be adept at communicating their value to non-engineers and that it is not just ageist attitudes at play:

As I get older, particularly in this particular environment, you can’t convey that you do have a range of skills and knowledge and wisdom I guess that’s come from being more mature, been working for longer years – that they’re not taking advantage of. (#21Org)
I learned from another engineer that he was one of the remaining few in his field who hold the expert knowledge to make the necessary repairs and ensure safety standards on the heavy machinery that he is so familiar with and “there is very very little training being done for people coming through”. A great sense of urgency to pass on his knowledge came through in his conversation with me. Unfortunately, time was not on his side and he did not live long enough to fulfil this mission.

The engineers in this study identified that over the decades since they entered the profession, traditional lines of knowledge transfer across generations of practising engineers have now been fractured. It struck me that they, like the elders in indigenous cultures (Warburton & Chambers 2007), are worried about the future without their knowledge.

I speculate about how transferring knowledge through a custodian role enables these experienced practitioners to leave a valuable legacy to younger engineers as well as to their organisations, industries or the profession’s “canon of knowledge”. If they can find avenues to pass on their accumulated knowledge as a legacy, then that knowledge and the value of their working lives will not be “wasted” or destined for the “scrapheap”. Instead their working lives will continue to have influence and impact into the future. It is through elder roles as knowledge custodians in their professional communities that they can impart their knowledge whether through mentoring individual younger engineers or embedding their knowledge in organisational and industry practices.

**Knowledge as a commodity**

The words of the engineers in this study express in different ways a belief that the extensive knowledge they have gained during their professional life is of value to organisations and the wider community. Three participants offered their own explanations for employers’ apparent devaluing of mature engineers and their knowledge. According to these participants, many organisations now treat engineering knowledge and skills as a “commodity” or a “product” that can be purchased in the market. They made connections between such a commercial or
economic rationalist approach and employers abrogating their responsibility for providing existing staff with training, mentoring and professional development, including ensuring knowledge transfer from mature engineers for succession planning. The next extract describes employers’ impersonal attitudes to professional engineers and the expertise they hold. His experience included a succession of contracts and I hear a tone of dismay in the way he talks about skilled personnel being treated as disposable objects:

Now if they’re working on a project basis or something like that, at the end of the job they just get rid of everybody ... Whereas if they were to have kept them as a resource and looked after them, they would have had that resource. And it obviously wasn’t important to them, they just thought it was a commodity and they could get rid of it, and you could hire another one when you wanted it ... the philosophy seems to be by the companies ‘oh we want to buy them off the street’. Just like a commodity. (#8SE)

Another self-employed engineer similarly observed that employers assume they can hire expertise instead of developing their employees’ expertise. He extends his commentary to warn that one day the outside expertise might not be available:

There doesn’t seem to be any sort of structure to formal mentoring, handing on... Employers don’t seem to want to pay for any of that. There still seems to be a view in the world that you can just go and hire expertise, if you can’t get it in Australia you just bring it from overseas. One of these days it won’t be there I think. So there’s no training schemes. (#29SE)

A further dimension to the notion of knowledge being treated as a market commodity was suggested to me when a government employee explained to me that the government’s attitude is that “if you pay the price you can get the product or you can get the skill set in the market”. In his opinion, however, “the market is not ready” for outsourcing of so many services to the private sector because of a skill shortage of engineers with the necessary experience.

It seems to me that when professional knowledge is treated as a commodity available for purchase in the marketplace, then the value of older “veteran” employees for the retention of corporate memory can be disregarded by employers, particularly as younger professionals represent a cheaper labour supply. If employers do not value
the knowledge held by their mature engineers then that knowledge is at risk of being lost, which is the case for a participant who was confronted with his job being made redundant following the organisation’s most recent major restructure. He noted a thrust to reduce expenditure by shedding the jobs of those “at the older, oldest corporate memory level” and emphasised that experienced engineers cannot be equated with new graduates when he said “you can’t replace the 20 or 30 year veteran with somebody who’s recently graduated from uni”. He expects he will leave “an empty desk”, that “everything that is in the head attached to the body walks out the door” and the work of his position will be outsourced to a consultancy company. I hear in his story that he interprets his imminent redundancy as an act of demeaning his advanced specialist knowledge that he has devoted a long career to developing. This thread will be picked up in the indignation story.

In contrast to the commodification of valued knowledge potentially creating difficulties for salaried engineers in this study, self-employed engineers can benefit from outsourcing of contracts. In an interesting twist, many of those now in self-employment had been forced out of their long-term employment as organisations restructured their workforce and outsourced business. Their retrenchment and subsequent unsuccessful job searches may indicate a devaluing of their knowledge and experience by employers, yet paradoxically it is that same knowledge and experience that they are now trading in the market to attract work. For all the self-employed engineers, their workflow is dependent on their knowledge, experience and skills being considered a valuable commodity by potential clients. Overall, they appear to derive satisfaction from trading on the worth of their resource of knowledge and experience and their value in the market is measured more directly than for their colleagues on fixed salaries.

The positioning of knowledge as a commodity raised an interpretation in my mind that some participants feel frustrated by the increasing managerialism of their employing organisations because their professional knowledge is no longer respected beyond its immediate commercial value. In these cases the engineers and senior management are valuing “The Knowledge” differently. Furthermore, if professional knowledge provides
the basis for recognition of influence and authority, then treating knowledge as a commodity and knowledge-holders as replaceable might undermine the value of being a mature engineer in an organisation. A disconcerting prospect would then loom that they will not be able to enact a sense of personal or professional obligation to leave a legacy of knowledge, instead their career’s worth of knowledge could end up “on the scrapheap”.

**Questions arising from my sense-making**

As I completed my sense-making for this motif, I was particularly intrigued by five issues that seemed to me to call for another layer of understanding and further exploration:

Question 5. What underpins a strong desire to pass on knowledge?

Question 6. How can the desire to leave a legacy through knowledge transfer be understood in the context of later professional life?

Question 7. How can we understand the dilemma facing many mature practitioners that they may be at the peak of their experience and knowledge yet lack organisational processes to ensure their knowledge survives into the future?

Question 8. Do mature practitioners necessarily have the means to pass on the knowledge in their heads? Can they articulate what is valuable and do they have the skills for successful transfer? And do they have access to younger practitioners ready to engage in knowledge transfer?

Question 9. Will there be a future for mature practitioners in modern organisations if knowledge is treated as a commodity?

In the next chapter, I present the remaining two motifs: indignation and stepping off.
CHAPTER SIX     SECOND READING: MOTIFS 3 AND 4

Introduction

This chapter continues the presentation of the four motifs I developed through my second reading. The two motifs presented in this chapter are indignation and stepping off.

Motif: Indignation

For several of the engineers, it seemed to me that being a mature engineer and becoming elders have brought significant pain. All the engineers have lived through changing economic and social landscapes over several decades, a landscape that is shared by many other people in the workforce, ranging from unskilled to highly trained professionals. For those who began their careers in an era of large engineering-based organisations in both government and the private sector, the decades have brought cycles of restructuring that is both systemic and organisational. As explored in the previous chapter, I thought that most of the engineers who participated in this study were concerned about the loss of engineering knowledge and practice wisdom, and the consequences of this for society as a whole, for the profession and for themselves. But in a few of the longest interviews, I read something that I interpreted as a sense of hurt and betrayal that has not been reconciled. I initially used the word ‘betrayal’ to capture the emotion that was expressed by these more intense voices. In my later sense-making I replaced this with the term indignation to better align with the tone of the wider group’s struggles with organisational and systemic impacts on their working lives that may have entailed a sense of being let down through to being shafted. The interviews that I draw on for this motif were full of vivid metaphors and images. Extracts were included in Chapter Four but I have included some longer quotations here.
Being devalued

And I suppose in a sense you sort of wonder how they value you, you know, we’re still doing the same roles but it’s just ... um ... people are going to say ‘you’re only at the bottom of the chain basically’, because we don’t have people, our team is, I don’t have anyone reporting to me. And I suppose I’m looking around, like my manager, he lost his role and they just quietly pushed him to the side. And he’s got lots, you know, he’s got lots he can share but we’re not put in positions where you sort of feel like ... well ... you feel valued, I think that’s the word. You obviously get to a stage in your career where you’re not going to move up, and that’s fine, I understand that, but I think then you still need to feel that you are still a valued employee. And I don’t feel that, yeah. (#11Org)

These were the words of an engineer who has worked for 25 years in an organisation that has undergone major restructures, mergers and corporatisation during his employment. Retrenchment has become familiar in his workplace and he expects that he will be retrenched himself in the coming months. Narrative iterations of hurt and injustice about the demeaning way that employers treat their older employees amplify and crystallise during the interview. His story evokes a struggle with a sense of invisibility to management and decision-makers in the organisation and that he appears destined for the metaphorical “scrapheap” of older engineers.

It seemed to me that he felt insecure and uncomfortable after the previous round of retrenchments targeted experienced employees, and effectively demoted both his manager and him, with the result that he no longer feels valued and perceives he has lost status in the eyes of others. A sense of being alone, with no one reporting to him, also came through for me.

Feeling invisible was also something that I drew from his words. He said that his organisation is only interested in “go-getters” and “high level achievers” whereas he described himself as quiet and not comfortable in group settings.

Later in the interview he twice repeated a recent experience of his internal job application being cast aside because a decision was made that he could not be innovative if he returned to a former role. He perceived this assumption as ageist and during the conversation it seemed to me that he became increasingly emphatic,
moving from “that was really inappropriate” to “I think that really profoundly affected me” and finally to “I just find it offensive”.

In response to my open question at the end of the interview about whether he wanted to add anything more, he initially said he had “only one thing” to add, but this developed into a longer statement about how older employees in his company were not valued, a neglect that he feels deeply:

No I think, the only thing I’d add is that our company now is more focused on the future but they need to be mindful of the ones who have come along the journey and that they are still part of the business … This is my perception, it is about the future and I think they’ve dropped the bundle on what they’ve already got. And there isn’t a date and after that date that person is no value … But I think the underlying thing is everybody needs to feel valued in their workplace no matter what they do and they need to feel comfortable that they can have those conversations – not feel like they’re, ‘well if you don’t do this you haven’t got a job’ [short laugh]. There you go, that will do me.

His final words seemed to me to be poignant:

I thought ‘I have a story. Why not share it?’ I don’t think I’m sharing anything here at work so this is a way of sharing something. And maybe by saying this story it may give them, may jog them to think about they have a valuable resource within their business and they’re not really capitalising on it as well as they could do.

**Being robbed**

At the time the interviews were held, three participants had been notified of their impending redundancy. The youngest of these engineers, aged in his early 60s, had been given more than 12 months’ notification of his termination date. He seemed well adjusted to the prospect of a redundancy package and taking a break from a 40 year career to test out the experience of retirement life. In contrast, the other two engineers in their mid 70s did not welcome ending their organisational careers earlier than they had intended. They were both specialist experts in their fields who had reached the uppermost levels of their technical career paths.

One of these said that his ongoing decision to continue working had been predicated on the belief that his technical expertise would still be of use and “adding value” to the
organisation. He had crafted a new direction for his engineering career. His plans were well in hand at the time of the interview and I subsequently learned that they had come to fruition. But in answer to his own question of what has motivated him to continue work past 65, his language in the following exchange became the most emphatic in the interview:

And as far as my colleagues were concerned I was adding value in a highly technical area. And nobody said to me, other than when my boss said to me seven or eight or nine years ago ‘when are you going to retire?’ and I said ‘when you tell me I no longer add value’. And that was the last time it was ever raised ... Nobody said to me ‘mate you’re wasting your time here, you know, you’re not helping anybody, why don’t you piss off!’ If they did I’d be out of there in a flash. (#25Org)

His retrenchment appeared to him to convey a message to “piss off”. He did not assume the reason was because he was no longer adding value. Instead, he described his retrenchment as an act of downsizing that targeted the positions of many “veterans” in the organisation. While in reality it could well be that management no longer value his knowledge sufficiently to continue to employ him or to create a succession plan within the organisation, he was making a very different sense of it. His response to his own self-posed question as why he had continued to work past 65 was: “And I was still working because I still saw a future for myself”. This seemed to me to express a sense that he has been robbed of that envisaged future and that the timing of his departure is no longer within his control. He seemed yet to discover whether further disappointment awaited him in the near future. If colleagues do not take up his offer to contact him for advice, he said he would interpret their silence as a devaluing not just of his knowledge but of his professional worth. From a career peak of recognition as a specialist expert in his field, he could in a short time be forgotten by the organisation:

I would be disappointed if I left this organisation and nobody ever approached me before I left or after I left for advice. You know, that would be a big disappointment.

(Interviewer: And what would that mean – how would you interpret that if they didn’t?)

I wasn’t considered as somebody that had, that added value, or had anything that was worth knowing.
A third participant, at the time of the interview, was attempting to negotiate to defer his redundancy until he completed his mission of knowledge transfer. In common with the previous engineer, his anticipated future had been taken away:

I would’ve liked another couple of years and I would have been happy to leave then, everything else being equal, but the organisation is cutting that off which I find very upsetting – although I’m not going to dwell on that. (#30Org)

He too had continued working long past the traditional retirement age because he believed that his high-level technical knowledge added value to the organisation, but his impending retrenchment suggested to him that his employer does not reciprocate that assessment. The actions of the organisation that have culminated in his imminent retrenchment seemed to me to have struck to the core of his sense of meaning and purpose for his professional working life. Feelings of hurt and indignation seemed very present in the interview. He said that over the past few years the organisation has slowly “squeezed [him] out of the sphere of influence” and his retrenchment represents being “shafted” by the organisation.

**The future of the profession has been compromised**

Reflecting on the span of their careers as engineers, some participants spoke in ways that went beyond a sense of indignation that they had not been able to realise the career promise of engineering. Some also specifically identified a career problem for engineers more generally, who they said end up with “stunted” career paths if they remain in their technical field or are forced into the management stream to progress to higher levels of influence and remuneration. One engineer, who shifted to self-employment from a senior management role in local government, links such lack of progression with an overall lack of recognition and reward for the profession:

My main beef is that engineers are being forced into management and all that sort of thing and then not getting paid enough for it. The engineering expertise, the stuff that took you years at university flogging away at one of the hardest courses there is, you’re not getting rewarded for it, when you’ve had years and years of experience, the rewards aren’t there. I wouldn’t advise anybody to go into engineering. I’m firmly of the view that if I’d become a plumber I’d have a lot more money today than I have. Being an engineer, you walk in and you tell them ‘this is how much money I want an hour’ and they say ‘gee that’s a lot of
money’ and I say ‘well go and get a friggin’ plumber to do it for you – you won’t get it cheaper’. (#28SE)

A sense of indignation and injustice about younger people being let down also came through for me. One engineer, although himself struggling to find work, said that his motivation to participate in the research was prompted by his concern about the future for younger people who are being “lured into studying and no outcome at the end of it, not a satisfactory outcome” and the difficulties for them to develop an engineering career without secure employment. He spoke of federal government policy announcements that would limit income support to unemployed young people, as well as substantially increase the contribution of tertiary students to their tuition fees. Another participant was similarly motivated to participate in this research:

Because I’m a bit irritated with the current logic in federal government in terms of education, in terms of making engineering more expensive for students and talking about charging fees for higher degrees and things like that. I said to you earlier that engineers aren’t particularly well paid and they’re just making engineering less and less attractive … Engineering is hard work as a course and you’re putting barriers in the way of people going into engineering. (#20Org).

He proceeded to make comment about the impact that he thought shedding engineers from government organisations is likely to have on societal functioning:

So there’s certainly been activity or discussion that the baby boomer generation is leaving engineering and it’s going to make this large hole, and are there people there who are going to be able to fill it. The government has de-engineered itself at all levels so no longer can make good technical decisions, because it just doesn’t have the skills. And I don’t think any of them really realise that because so much of that part of society is run by number crunchers and suchlike – it’s not such an easy thing to prove that the amount of waste and suchlike that’s going to occur in the next 20 years in this country because we didn’t have the people with the right skills to do all the infrastructure work that’s got to happen. (#20Org)

It seemed to me that employers were perceived as compromising the future of the profession by not providing opportunities for younger engineers to benefit from the practice wisdom of mature engineers. This requires the continuing employment of mature engineers to provide on the job learning, coaching and mentoring. One engineer (#30Org) spoke about it this way: “when a person comes and asks you a
question about how to do something or why is it done this way, that’s when they learn the best”. Not only was he “disappointed” that his organisation no longer perceived an obligation to the professional development of younger engineers, but he also saw this as part of the organisation’s wider betrayal of younger engineers and the value of workplace loyalty:

> It’s set out to screw the staff in whatever way they could dream up. And I find that a sad thing because it says to the younger people ‘don’t bother making an effort and doing a good job because in the end it won’t be appreciated’ ... It’s sad ... (#30 Org)

**Questions arising from my sense-making**

The questions that arose for me from the development of the motif of *indignation* were:

**Question 10.** What does it mean for professional practice if a mature practitioner lacks a sustaining future orientation for their own working life and for their profession as a whole?

**Question 11.** How is professional practice in later life impacted if organisations are seen to be targeting for retrenchment their most experienced employees (“veterans”) with critical knowledge?

**Question 12.** What happens to practice as mature professionals realise they can no longer stay as long as they wish in the current employment environment?

**Motif: Stepping off**

The phrase for this final motif, *stepping off*, was borrowed from one participant when he said that that he felt “a bit of fear and trepidation stepping off this wonderful environment into something I don’t know”. While not everyone claimed that they were currently working in a “wonderful environment”, their words suggested to me respect for their current professional status as engineers and loss or regret at the prospect of leaving work. Their wealth of knowledge has grown during the decades of
their careers and as the *becoming elders* motif relates, participants spoke of their wish to leave a legacy of their working lives through some form of knowledge transfer. These mature engineers face the prospect that the journey of their career will eventually come to an end, but how that will happen and what their new world will look like, for most, seemed to be unclear.

**Holding on and letting go**

Participants did not initiate a definition of retirement and I did not offer one. People used the word retirement to refer to resignations from long-term employment, life with no paid work or a reduced amount of paid work, sometimes interchangeably. The timing of retirement was not necessarily by choice, even if nominally “voluntary” in the case of health problems and redundancy; those facing retrenchment could either submit to the inevitable or struggle with management to renegotiate the timing of their exit. However, when speaking about retirement, some used evocative phrases such as “God’s waiting room”, “abdication”, “put out to pasture” and “vegetating”. With images such as these, it would not be not surprising if many did not want to think about leaving their work roles and communities.

*Stepping off* for the person who used the phrase was talking about leaving behind a familiar and solid world and crossing to an uncertain space. But it seemed to me that some engineers were speaking of an increasing awareness of a sense of mortality and a few participants gave stark expression to this in their narratives. For one, his father’s recent death had prompted him to heed his own ticking clock – “everybody’s got a card and a time clock and it’s ticking away” – and to resolve to leave the world of engineering when he turns 60 so he is free to pursue other well-developed interests. In the meantime, it will be up to his employer whether he will be granted his wish to take on more knowledge custodian roles and become a “thinker-in-residence”. At the time of our interview, he seemed to me to be optimistic about his capacity to let go his engineering persona.

A contrasting statement came from an engineer who seemed to me to associate the end of working life with early death or admission to a nursing home rather than a new
beginning. His mentioned a nursing home four times, along with advice to keep working and “stay out there”:

I think it’s good for people to stay out there. I think sometimes people retire too early and I know people who have retired and they’re dead within two or three years. It’s bit like going into a nursing home. I was listening to the radio yesterday and going into a nursing home probably means you’ve got about 12 months to live. And a lot of people sort of don’t even want to contemplate that because they see the historical significance of going into a nursing home. Stay out of a nursing home and stay active. (#13Org)

Others spoke about continuing to work to hold on to their sense of vitality and keep threats of old age at bay, as in this vignette:

You get a bit delusional when you get to my age [68] to be honest. Because it’s not until you look in the mirror that you realise how old you are – you don’t tend to think you’re that age – and sometimes it’s not until you do something physical, like you can’t get up at 4 o’clock, drive 500 kilometres, do a day’s work and drive home again, like you used to 20 years ago. I don’t do that now. And you can’t run around on the roof, so I’d be useless looking after a bridge job now for example, you’re not steady enough on your feet anymore. But apart from those sorts of reminders you don’t feel your age. (#29SE)

Like the previous participant, he also said to “just keep going” as long as possible and adapting around the demands of the job. After saying that he was letting his own future “evolve” and also that his father-in-law is bored in retirement, he said that work enabled him to “get around a bit so you’re still in amongst it”. For him, working does more than allow him to still feel vital. He said that he has repeatedly extended his working life past a series of end dates because of his fear of dementia:

And that’s another thing, you don’t know how long you’re going to live, I could be dead in two years, I might live for another 30, I don’t know – probably go silly first. And that’s just reminded me of something. I guess the other thing that is in the back of my mind is my mother had dementia ... So that’s another thing perhaps that drives me, I think I am still using my brain – that might be a subconscious thing but I think it is there, I think it is there ... But that dementia thing I think is in the back of it, perhaps subconsciously driving me, I don’t know. I’d forgotten about that to be honest. (#29SE)

I read it that stepping off can mean much more than risking withdrawal of social and mental stimulation. However, most did not speak of it in those terms during the interview. For most, continuing their professional life would save them from the
struggle to find a stimulating, absorbing and meaningful interest to replace the purpose and enjoyment that work currently provides.

Yet, I thought that a big piece was missing from their statements. How they will know when they are no longer “adding value”, have become “a silly old bugger” or that their professional judgement capacities are compromised. My inference from the way they spoke is that their default position is that others would tell them, which is problematic in itself. Some spoke of the high level of risk inherent in professional engineering decision-making and some had chosen to move away from high stress positions but the notion that their professional competence might eventually wain did not seem to figure in their contemplations of how long they would continue in their professional roles.

**The struggle with retirement**

The dynamic tension between holding on and letting go led me to the idea of retirement as a struggle. Ironically, while mature engineers rely on their experience and knowledge for assessing risk and making professional judgement for complex decision-making, the transition to retirement requires them to make decisions for which they lack relevant knowledge.

That sense of struggle was portrayed for me by an engineer who, following a long career acquiring knowledge and skills and many years in senior positions, foresees he will be pushed out of the “mainstream” of society after he retires, which would mean he could lose an important sense of belonging. His words suggested to me that he is struggling with his envisioned transition from work to retirement because he perceives it will expose him to society’s demeaning attitude to the worth of older people:

> What I would like to understand, which I don’t understand, is that with age I feel that society as a whole has a tendency of saying ‘oh you are old – so relax, you don’t have to be in the mainstream’. And that sort of an attitude of society to its old people, why it has to be like that, I do not understand. And that’s a question that looms in my mind at retirement – why I have to think that I’m an old person. So maybe I have not been able to articulate it well, because that’s one thing that comes to my mind that I keep thinking about it ... In short, rejection. (#16Org)
He said he intended to shift his work focus from his paid engineering career to a volunteer role in the community, but the sticking point appeared to be the threat of invisibility, of being rejected because he is considered “old”. A desirable future life appears difficult for him to imagine and thinking about it seems to throw up more dilemmas. My interpretation is that the life of work as an engineer and the life of retirement present as distinct worlds for many engineers, so that what will happen when they step off can seem almost unknowable from their current position in their communities of work.

One engineer offered what I read as a political and social commentary on how people have been left to sort out their own retirement support because of the demise of the “social contract”. He said that the responsibility for retirement support has shifted from employers and government onto the individual as part of the thrust of neoliberalism:

> And that’s another part of neoliberalism, you see. Freedom of free trade, free markets, all that sort of thing. They push, the corporates and the governments are now pushing the responsibility to you, to the household. It’s The Shift, they call it, you’ve probably of heard it – The Great Shift. The Shift – pushing costs, risk and responsibility onto the household. (#33SE)

His last statement also conveyed to me a strong sense of indignation about systemic betrayal:

> They wash their hands of you, ‘look after your own retirement, go figure, do the maths’.

**Self-employment as a liminal space**

I wondered if stepping off is different or easier for people who have been self-employed for some time, as compared with those who might be contemplating it as a transitional strategy from being employed in an organisation. They have the option, in theory at least, of gradually becoming more selective about the type of work they accept, the number of hours they work, and the distances they travel. They can potentially schedule longer periods of holidays to travel and be more flexible for family and other interests. As described previously, some of those in self-employment
pointed out that shifting to self-employment is a satisfying way to extend professional working life and avoids an abrupt exit from full-time work: “You’re not slamming the door shut one day and just turning your back on everything”. At age 66, this engineer said he still enjoys working as a self-employed consultant, which also allows him to run his farm on the days he is not engaged in his engineering work. He maintains a balance to suit him in this period of his life and the timing of his plans for stepping off seemed hazy. He anticipated that eventually he will be willing to let go his professional life, which he expressed as the close of a chapter:

I think I’ll get to the stage where I’d be happy just to let it go, somewhere between 70 and 75. And say that chapter’s finished. (#32SE)

Self-employment poses uncertainties for people as a matter of routine: the ebb and flow of work, and the need to refresh referral networks. However, even for those used to these uncertainties, the impact of actual and potential health changes and the risk of one day being considered “a silly old bugger”, all might contribute to an experience of work in late career that can be both fulfilling and insecure. In this liminal space, as revealed in the meaning of retirement theme, retirement can arrive by default or by stealth and so it can be difficult for a person to know at what precise moment they actually have stepped off and ended their paid career. It would require a conscious decision “to take down the shingle”, but the more likely scenario, according to one engineer, is that referrals will “slowly peter out”:

I probably don’t particularly want to retire at this stage. Sometimes I get a bit fed up with it. And if I keep getting interesting work, then keep doing it I suppose ...

(Interviewer: So at what point would you consider yourself retired? How would you know you were retired?)

When I pulled the shingle down I think [short laugh] or close the doors ... When I say I’m not going to do it, but I expect, you know, the people I work with at the moment at councils, they’re my age to probably in their 40s is the youngest, and in a few years they’ll have all moved on or retired themselves. So I think the number of people who call me up to do things for them will diminish and it will slowly peter out. (#28SE)

Uncertainty and insecurity often appear in people’s stories as unwelcome difficulties. So I was intrigued by the positive attitude to uncertainty of a long-time self-employed
engineer who said he contemplates life as a journey and an adventure. For him, stepping off into unknown realms brings a sense of excitement that he relishes. Late in our interview when he reviews the notes he had jotted on his interview guide, this is what he said about his present life of self-employment:

What suits you about your current work arrangements? Yes, the uncertainty factor. If you know exactly what’s going to happen to you between now and the day you die, what use is that? Life is a journey and the adventure of uncertainty, not knowing what is around the next corner, the only way to find out is to go there by continuing your journey. That’s it. It’s curiosity too in that sense – what’s around the next corner? So that’s it. (#33SE)

Questions arising from my sense-making

Writing about this motif brought four more questions to mind:

Question 13. Why are the images of retirement so stagnant and unappealing for many of these engineers?

Question 14. What blocks contemplation of a future beyond professional working life?

Question 15. How do we understand the later life cycle of professional development and professional competence?

Question 16. How does self-employment in late career affect conceptualisation of retirement?

These four questions complete a set of sixteen questions arising from the four motifs presented in these last two chapters. Between them, they signal opportunities for further reflection, research and theorising. In the context of this study, they also make transparent the conceptual bridge I built between the words of the participants, my own interpretations of their words and the literature I could use to deepen and strengthen my understanding. In Chapter Seven I return to the literature review for further insight and in Chapter Eight seek additional guidance from other literatures.
CHAPTER SEVEN  REVISITING THE LITERATURE

Introduction

This chapter continues the interpretive work of exploring the conversations of the engineers by revisiting data, concepts and theoretical frameworks presented in the first literature review. It begins with a brief summary of the design of the study, so that the work of the previous chapters can be readily related to this one.

One of the features of using an inductive approach is to find out if the initial framing of the study reflects and holds the work that the participants actually did when engaging with the research questions and conversations; or if alternative frames are needed. As described in Chapter One, the initial framing and methodology of this thesis project focused on how the experiences and perceptions of professionals working relatively late in their lives might be reflecting contemporary debates in public policy and the academic literature. These debates include the economic and social consequences of ageing workforces and populations, the affordability of being retired for much longer periods of time than previous generations have been, and the approaches that organisations adopt to retaining or exiting older workers from the workplace.

Conversations with this group are important for several reasons. They mostly belong to the group known as baby boomers, although some in this study were older. Baby boomers have a reputation for inventing new ways of doing things, and it could be expected that they might have new ideas about retirement. And they also live at a time when changing demographics have forced systemic debates about the financial and social relationships that modern global economies and societies want to have with their older workers and retirees. For both reasons, times and practices are changing, and research needs to follow the nature and impact of those changes.

To study whether the experiences and perceptions of professionals working late might be reflecting contemporary debates in policy and literature, a literature review was undertaken, an inductive and interpretive study was designed, and generative questions were crafted. An invitation was sent via a professional association of
engineers in Australia. Then over a period of several months, in-depth conversations were recorded with 34 male Australian engineers aged 55 to 77 years. The key research questions were translated into a series of generative questions to explore the meaning of work in this phase of career as well as perceived constraints and opportunities for continuing employment.

As described in the Methodology Chapter (Chapter Three) and consistent with an inductive approach to data interpretation, I engaged in two readings of the texts without reference to the literature. The first reading of the transcripts focused on presenting how the participants themselves described working life in late career, using their own words. Six themes were presented that seemed to capture the range of what the engineers had to say: changing meaning of work, future work intentions, being older in the workplace, passing on knowledge, de-engineering as a changing context, and meaning of retirement. That first reading is set out in Chapter Four. A second reading provided the opportunity for me to explore and construct my own sense-making of their accounts. I developed the four motifs that are described in Chapters Five and Six: being a mature engineer, becoming elders, indignation and stepping off. Together these chapters described how the four motifs add further insight into the words of the engineers themselves. They also set out sixteen conceptual questions I developed that could potentially be taken to the literature for a deeper theoretical understanding of the issues of the engineers. These sixteen questions were developed in an attempt to do justice to the range of serious issues that the engineers raised during their conversations with me.

However, it became clear that I could not take all sixteen questions to the literature in the later chapters of the thesis without limiting the engagement with the literature to a relatively superficial treatment of the issues. As I explain in the next section, I ended up crafting six questions that try to capture those of the original sixteen that relate directly to the four motifs that I identified in my own readings of the words of the engineers. Two of the sixteen questions had to be acknowledged but omitted from the conceptual work of this chapter. They will be revisited in the final chapter as a fruitful source of possible future research questions.
The current chapter, then, is focused on using strong conceptual questions to explore the possibilities for understanding and insight that arise from connecting the motifs with the ideas and theories held in the literature. It begins with describing the process through which links with the literature were made. It then considers each of the six questions I ended up with, relating them to the ideas and frameworks covered in the initial literature review. It concludes with a summary of the work of the chapter: the articulation of the dynamics and tensions of working late as a professional engineer that have been suggested through my reading of the conversations with engineers themselves, and through the ideas contained in the initial literature review. This summary also reveals some significant possibilities for further, and different exploration of the literature, which are taken up in Chapter Eight.

Making links with the literature through developing conceptual questions

As a further iteration of data interpretation, I engaged in a fresh reading of each of the four motifs to identify areas where I felt that my sense-making raised further questions and possibilities for understanding the accounts of the engineers. At the end of the presentation of each of the motifs, I tried to craft some questions that drew together these further points of curiosity and questioning. The sixteen questions reprised here reflect that the data set created from the interviews was rich in possibility and could have taken the thesis in many different directions.

Motif: Being a mature engineer

Question 1. What fuels the changing sources of work meaning for these engineers as mature practitioners in later career?

Question 2. How do individuals negotiate the terrain of their attachment to work when their sense of self as a mature practitioner is not recognised or valued by others?
Question 3. What is the importance of a sense of belonging for mature professional practice?

Question 4. How can we understand the desire for continuing influence and impact in late career?

Motif: Becoming elders

Question 5. What underpins a strong desire to pass on knowledge?

Question 6. How can the desire to leave a legacy through knowledge transfer be understood in the context of later professional life?

Question 7. How can we understand the dilemma facing many mature practitioners that they may be at the peak of their experience and knowledge yet lack organisational processes to ensure their knowledge survives into the future?

Question 8. Do mature practitioners necessarily have the means to pass on the knowledge in their heads? Can they articulate what is valuable and do they have the skills for successful transfer? And do they have access to younger practitioners ready to engage in knowledge transfer?

Question 9. Will there be a future for mature practitioners in modern organisations if knowledge is treated as a commodity?

Motif: Indignation

Question 10. What does it mean for professional practice if a mature practitioner lacks a sustaining future orientation for their own working life and for their profession as a whole?
Question 11. How is professional practice in later life impacted if organisations are seen to be targeting for retrenchment their most experienced employees (“veterans”) with critical knowledge?

Question 12. What happens to practice as mature professionals realise they can no longer stay as long as they wish in the current employment environment?

*Motif: Stepping off*

Question 13. Why are the images of retirement so stagnant and unappealing for many of these engineers?

Question 14. What blocks contemplation of a future beyond professional working life?

Question 15. How do we understand the later life cycle of professional development and professional competence?

Question 16. How does self-employment in late career affect conceptualisation of retirement?

When I gathered together these sixteen questions I realised that I would need to let go some of the lines of inquiry they opened up, and attempt to distil the questions so as to retain their range while trying to capture their essence. Some questions connected across multiple motifs to form broader questions. However, the crafting of a smaller number of questions could not be handled simply as a technical or analytical task. To do justice to the engineers, I felt the questions also needed to reflect something of the experience of the conversations I had with them, and particularly their commitment to the study. So before refining the questions, I wanted to revisit my experiences of meeting and talking with the engineers.
As I described in Chapter Three, the engineers responded to the publicity of their own volition because they wanted to talk about the issues of professional practice that are most important to them at this later stage of their careers. So not only did they respond to my open-ended questions about their experiences and perceptions of later working life but they also initiated topics of their own. Many of them wanted to talk about their continuing interest in working as engineers and the future of their profession. They talked about what it means to them now to be a mature practitioner, to be still deeply attached to their profession. They talked about being the custodians of knowledge that they consider to be vital for the country as well as the profession. A few spoke about feeling devalued and even shafted. And eventually, when they had spoken about all these things, some talked about the tensions created by trying to hold on to work while experiencing the early stages of letting go.

But while the interview provided the space for participants to give voice to the issues that were alive for them, I also wondered whether their stated reasons for participating in the research necessarily captured all the drivers that might have brought them to speak with me so willingly. I wondered if, perhaps without being fully aware of it, they wanted to make more sense of their own professional life experiences by sharing them with me in the context of a research project. Participation in the research could provide a sense of belonging to the wider professional world, a sense of visibility and the possibility of making an impact on how their profession is understood by those outside of it.

With all these things in mind, I distilled the initial set of sixteen questions that arose from the motifs into the following six questions:

Question 1. What does it mean to be a mature engineering practitioner in later career?

Question 2. How do mature engineers struggle with and deal with the desire for continuing influence and impact in late career? In particular, how do they negotiate the terrain of their attachment to work when they perceive their status as a “veteran” is no longer valued in the modern organisation?
Question 3. What does it mean for professional practitioners if they not only doubt the future for their own practice but also believe that the future of the profession is being undermined?

Question 4. With the master-apprentice mode of knowledge transfer now outdated in most modern organisations, how could mature engineers cultivate elder roles and skills to pass on their practice wisdom to younger engineers and to their wider professional settings?

Question 5. How can continuing professional development be reimagined and revitalised for mature engineers in the later part of their careers?

Question 6. With these engineers’ dominant images of retirement as stagnant and unappealing, and phased employment, self-employment and volunteer work envisaged as a means to extend professional life, are there glimpses into how professionals with a strong attachment to their work might negotiate their way to a new phase of life?

These questions were intended to help me revisit the literature in order to gain further insight into the possibilities that the questions posed. And of course even these six more focused questions immediately opened up others ideas: they were as generative as the larger number of questions they tried to encompass.

**Using the questions to look for insights in the initial literature review**

This section explores how the initial literature review has offered useful concepts and theory for engaging with each of the six conceptual questions.

By way of reconnection with that literature review, it is worth highlighting that it presented the large number of different disciplinary perspectives that have informed our understanding of working later in life in the twenty-first century. These have included economics, sociology, psychology, organisation studies, human resources management and life course theory. Across all these perspectives, working late can be
understood systemically, organisationally and personally. So the dynamics are complex, interacting, overlapping and often contradictory. And, arguably, the literature is struggling to keep up with the increasing volatility of the political processes that are emerging across the world in response to rapid economic and social change. It is not surprising, then, that a range of messages – some of them contested and contradictory - were conveyed in that literature. For example, much has been written about the economic and social necessity for policies aimed at encouraging older adults to extend their working life to relieve the assumed burden on taxpayers in younger generations. At the same time, research indicates that many mature-age workers and job seekers experience age discrimination in their workplaces or in recruitment processes.

My initial review of the literature also highlighted for me that amongst all the perspectives on extended working life, little attention has been devoted to finding out how individual professionals make sense of the professional practice issues which emerge for them as they continue to work later in life in these uncertain and liquid times of the early twenty-first century. That gap was a major factor in my initial positioning of this doctoral study, as previously explained.

When I re-read my initial engagement with the literature in Chapter Two to examine how the theoretical approaches could throw light on the six conceptual questions, I was struck by the discrepancy between the prominence that the literature attributes to financial influences on people’s decision-making about continuation of working life and the low priority the engineers gave to this dimension, in light of the many other issues they spoke about. A further obvious discrepancy between the literature and the statements of the engineers was the emphasis of the literature on rational and planned retirement decision-making (Wang & Shultz 2010), in contrast to the overall orientation of the engineers to remain engaged in their working world rather than to plan their transition to retirement. And finally, almost no acknowledgement was made of the possibility that professional practice in later working is continuing to develop, not just regress or stagnate, and that its development is worthy of attention and effort.
However, that does not mean that the initial literature review was unhelpful. Quite the contrary: when I re-read the literature it helped me to make further sense of both my readings of the engineers’ words. And during the time when I was deliberately trying to keep my mind clear of theory in order to undertake the readings, the literatures I had studied initially had continued to develop. There were fresh ideas and approaches emerging, some of which suggested that greater effort was being made to cross disciplinary boundaries. As a result, this chapter does not simply catalogue the ways in which the literature aligns with the words of the engineers and my own interpretive work, but opens up further significant possibilities for understanding. It culminates in the presentation of a table constructed during the writing of this chapter, to summarise the key dynamics of working late articulated through the two readings and the six conceptual questions, and that were largely supported or extended by revisiting the initial literature. This table represents one of the major contributions of the study.

**Question 1**

**What does it mean to be a mature engineering practitioner in later career?**

Although I had framed the first motif (*being a mature engineer*) around the notion of the engineers enacting their attachment to their professional work as mature practitioners, this was not a conceptualisation that I had anticipated from my preliminary reading of the literature. Delving back into the meso level perspectives of professional occupations, the concept of knowledge workers defines mature engineering practitioners on the basis of their educational qualifications and intellectual capital (Lord 2002; Powell & Snellman 2004). Indeed, one of the engineers spoke of himself and other technical professionals as knowledge workers. As knowledge workers, these mature practitioners can also be understood as assets who are holding valuable knowledge required for a productive economy in the twenty-first century (Australian Workforce and Productivity Agency 2013; Drucker 1999). In light of the nature of their labour being intellectual rather than physical, knowledge workers can potentially continue in practice well past typical retirement ages for more physical occupations (Patrickson & Ranzijn 2005) and it has been speculated that they have the added incentive of being more likely to derive fulfilment from their work than less
skilled workers (Vickerstaff 2010). Enjoyment and fulfilment from work came through strongly as part of the mature engineers’ experience of later career, but the physical demands were more nuanced than I had gleaned from the literature. The unhealthy sedentary nature of computer work concerned a few engineers as it formed the bulk of their working hours. And those with more physical demands in their roles, such as climbing on bridges or machinery, spoke of foregoing or modifying some familiar tasks.

Another perspective on what it means to be a mature practitioner in later career came through a fresh reading of Lee et al. (2011) which brought to light the notion of craft experts. At the time of my initial engagement with the literature I referenced this study in relation to the precarious nature of professional careers and transition to retirement but did not recognise the relevance of craft experts to the direction that the interviews with the engineers would ultimately take my sense-making. As a step towards understanding how the experience of choice and constraint in professional lives might affect late career and retirement patterns, Lee et al. categorised managers’ and executives’ expertise and roles into organisation managers, experts and strategic managers. It was their elaboration of experts, some of whom were engineers, that helped to illuminate for me the nuances of the practitioner roles of mature engineers, particularly Lee et al.’s further distinction between technical experts who considered themselves as “craftsmen” and those who perceived themselves as corporate “human capital” with their expertise being “simply a commodity for sale on labour markets” (p. 6). The following extract sets out the conceptualisation by Lee et al. of “craft experts” and echoes the meanings that the engineers in the current study gave to their work as practitioners, as well as speaking to the sense of struggle when employers’ demands do not align with their sense of professional judgement:

... they felt a strong investment in having their expertise used as effectively as possible, perhaps even to achieve the maximum social good. ‘Craft’ experts were apt to feel frustrated when organizations did not allow them to do the best job they were capable of, or to achieve what they saw as desirable outcomes... ‘Craft’ experts tended to see their work and career as much more under their own control. They felt that they had ultimate responsibility for how their expertise was used, and that they could exercise choice and control in this respect, even if it meant going beyond or contradicting the requirements an employer laid down for them... (Lee et al. 2011, p. 6)
There are many elements in this extract that illuminate my interpretations of the experiences and perceptions of the engineers. The notion of a craft brings out the origins of engineering that preceded it becoming a profession with a theoretical foundation and resonates with the importance that the engineers give to their early years of hands-on experience that has contributed to the value they place on their practice wisdom. Being a mature practitioner means an integration of their theoretical base with layers of increasingly complex practical experience of applying their knowledge to challenging and new problems.

The description of craft experts also draws attention to the significance of professional judgement and authority which emerged from my analysis in the current study as a source of satisfaction and meaningful challenge in later career. The engineers spoke about having earned their authority from “hard lessons of history” and working in complex environments that demand the exercise of judgement. Like the conceptualisation of craft experts in Lee et al.’s study, some engineers spoke of themselves as “experts”, “technical experts” or “technical specialists”, “subject matter experts” and, for one participant, “an engineer’s engineer”. And they may be in senior positions or in self-employment where they carry responsibility for how they use their expertise and make decisions. This may involve a tension between their professional judgement and the employer’s or client’s requirements. What I understood through the interviews is that their professional autonomy is vitally important to them and for some provided the rationale for shifting to self-employment. Further insight is offered by the metaphor of “contributing on your own terms” that emerged from the interpretation by Lee et al. (2011) and Sargent et al. (2011) as a meaning of retirement from long-term employment for some of their participants. The metaphor makes sense for those who might identify as craft experts and seek to exercise autonomy in their professional practice. And the sense of contribution is also salient. As the motifs and themes from the previous chapters illuminated, contributing to make the world a better place can be read as one of the key motivators for the engineers to extend their working lives as mature practitioners.
Question 2

*How do mature engineers struggle with and deal with the desire for continuing influence and impact in late career? In particular, how do they negotiate the terrain of their attachment to work when they perceive their status as a “veteran” is no longer valued in the modern organisation?*

The relevance of the idea of “contributing on your own terms” extends into the area of desire for continuing influence and impact in late career. According to Lee et al. (2011), typically the craft experts wished to proceed to other work arrangements after official retirement or retrenchment from their long-term employment so they could continue to use their expertise whether paid or unpaid. Likewise, engineers in the current study were contemplating or already pursuing alternative work arrangements for continuing to use their professional expertise for influence and impact after their exit from organisational employment.

“Contributing on your own terms” sheds light on how some retired professionals perceived retirement as an avenue to continue working and to use their expertise to have impact and maintain their sense of a professional self, but through less demanding and more autonomous arrangements. This construction connects with theorising in the literature about the phenomenon of working in retirement (Kim & Feldman 2000) and bridge employment (Wang et al. 2008) where work continues or is resumed after retirement from a long-term career position in an organisation. These notions also reflect the blurring of the life course boundaries experienced by individuals in such arrangements between the once delineated worlds of work and retirement. In my study, the engineers who are already working part-time or are self-employed described themselves as ‘continuing their careers’ and not as ‘working in retirement’.

Some engineers presented the shift to self-employment as an important strategy for continuing their attachment to work in response to job dissatisfaction or retrenchment. What did not come to light in Lee et al.’s study is the level of struggle the expert professionals may have experienced or be experiencing to establish new
working arrangements. In the case of the engineers in my study, a sense of struggle was sometimes expressed through their ongoing negotiation of workflow in self-employment or their efforts to hold on to their current employment or perhaps the need for ongoing adaptation to changing priorities demanded by their job.

When I turned to the literature to further illuminate self-employment as a mode of career commitment, Platman’s (2004) approach resonated for me with the experiences related by the engineers. Although she conducted interviews with older media freelancers in the late 1990s in the United Kingdom, her findings remain relevant and might even be seminal in understanding the experiences of mature professionals moving into non-standard employment after organisational careers. Her framing of self-employment around the notion of flexibility highlights one of the attractions to the engineers of self-employment while also drawing attention to the drawbacks of the insecurities and demands of these flexible work arrangements, which were also raised as concerns by some engineers. Platman’s interviews with managers in the client organisations further illuminate the value accorded to self-employed mature professionals who bring ready-made experience, skills and networks for immediate use on a specific assignment, which delivers cost-effective flexibility for organisations. These attributes were similarly identified by the engineers. Seen through Platman’s lens, on the one hand self-employment provides a positive employment option for older engineering professionals to continue their professional work and take on new practice challenges; on the other hand, the benefits of flexibility and autonomy for self-employed professionals may be seriously outweighed by the inherent risks in the insecure nature of the work arrangement, particularly when poor health, outdated skills and declining referral networks come into play.

From an organisational perspective, Chapter Two pointed to research that suggested employers should promote the retention of valuable older employees with critical knowledge by offers of more flexible phased arrangements to delay retirement or to entice them back from retirement (Rau & Adams 2013; Zhan, Wang & Yao 2013). The importance of transitional arrangements, however, was ambiguous in the statements from the engineers. In terms of negotiating part-time arrangements with existing
employers, some engineers preferred to continue working full-time, some did not have the option available and others did not believe their job could be performed on this basis. Part-time work was also seen as relegation to less interesting work and as being unreasonably expected to perform a full-time workload on part-time salary. While suiting some, part-time work was not embraced as enthusiastically by this group of professionals as the literature would suggest.

The valuing of veterans’ knowledge by organisations is also an ambiguous issue particularly when organisational perspectives and individual perspectives do not align. For instance, the perception of many of the engineers in my study is that they and their colleagues hold knowledge that is valuable or critical to their employer but that the organisation is not interested in what they have to offer or does not understand the corporate significance of the knowledge they hold and the risks of lost knowledge. The mature practitioners’ perceptions and the employers’ perceptions seemed to them to be out of step with each other. And some of the engineers, as well as theorists such as Henkens and van Dalen (2013) and Rau and Adams (2013), understand the devaluing of veteran practitioners in terms of employers assuming they can replace their expertise through other avenues. This thinking is in line with the commodification of knowledge presented in the motif of being elders.

And the devaluing of veteran practitioners can also be understood in terms of negative age-based discriminatory attitudes. According to the literature presented in Chapter Two from the perspective of social policy, age discrimination represents a major barrier to employment in later life (Australian Human Rights Commission 2010, 2012, 2016; Cameron & Denniss 2013). While there were many positive examples in my study of the valuing of experience and knowledge of mature engineers, particularly those in self-employment, perceptions of age bias and discrimination were certainly in evidence in many commentaries, which affected opportunities for ongoing work and knowledge transfer, as well as causing some participants to feel marginalised and devalued by their employer. The common occurrence of organisational restructures and rounds of retrenchments has created a more precarious employment environment and threatens the duration of later careers for professionals in the current era (Bown-
Wilson & Parry 2013; Gabriel, Gray & Goregaokar 2013; Lee et al. 2011) and creates a need to find alternative pathways if they are to stay in the workforce. And here the literature on age discrimination, especially studies conducted by the Australian Human Rights Commission (2010, 2012, 2016), reinforces the engineers’ perceptions that there is reduced chance of securing a new job in today’s employment market if you are older. Indeed, some had turned to self-employment to continue their careers, as did participants in Platman’s (2004) study. In line with the engineers’ perceptions, Platman’s findings indicate that self-employment provides a way for mature professionals “to circumvent ageist structures” (p. 577) because they become “judged on what they can do rather than whether their face fits” (p. 576).

However, Platman’s lens also suggests that the valuing of experience of mature professionals in self-employment may be more precarious and time-limited than some self-employed people acknowledge.

Overall, with a strong desire to continue contributing their expertise for the benefit of their organisations and wider society, the statements of the mature engineers did not resonate with the dominant discourse that older adults represent a financial and social burden to younger generations, as outlined in Chapter Two. However, they sometimes encountered negative workplace attitudes that challenged or thwarted their opportunities to contribute their professional expertise as long as they wished.

**Question 3**

*What does it mean for mature practitioners if they not only doubt the future for their own practice but also believe that the future of the profession is being undermined?*

The literature offers a number of different perspectives on the likely trends in professional employment. Some of the literature suggests that the employment environment for older professional workers is positive because of likely severe skill shortages caused by the imminent retirement of large numbers of baby boomers (Oakman & Wells 2013; Shacklock & Brunetto 2011). Rau and Adams (2013) distinguish between organisations that are strategically retaining skilled employees and those that
are shedding older workers as a cost-cutting measure. The organisational trend to downsizing and contingent employment arrangements, along with increasing use of outsourcing and offshoring of work, means that organisations can replace the knowledge and skill set of older employees with alternative solutions on a needs basis (Hall & Mirvis 2013; Rau & Adams 2013). Drawing on the notions of technical experts as craftsmen and human capital proposed by Lee et al. (2011), mature practitioners might find themselves being treated as human capital in a commodified market even though they consider themselves experts in their craft.

The experience of deskilling and downgrading of employment status was explored in a study of job loss and recovery by Gabriel, Gray and Goregaokar (2013). Their two-year longitudinal narrative inquiry investigated the meaning of job loss for unemployed managers and professionals and their recovery approaches. The participants, mostly younger than the engineers in the current study, were all aged in their 50s and understood their career path as taking place in the corporate world. None had been able to return to former levels of career status, and a level of chance and capacity for flexibility influenced their recovery paths, along with the meanings they attributed to their dismissal and new life situation. Overall, it was not a positive story of shifting to a more flexible portfolio career, but of being marginalised on account of being considered old in the corporate world in a difficult economic period of job loss. Their findings offer useful insights for understanding the personal implications of job loss and the nature of efforts to regain employment in late career, as well as the ambiguities of flexibility when it entails lowering of expectations for career development in contrast to a sense of liberation.

The literature also suggests that the longer term story of fundamental restructuring of some forms of professional employment is also changing and ambiguous. On the one hand, the Office of the Chief Scientist (2013), regards engineering as having critical importance for the nation’s productivity, innovation and wellbeing. And Rau and Adams (2013) suggest that some employers are not yet feeling a critical impact of lost knowledge and skills shortage in their actual and potential workforces. On the other hand, it is suggested that the demand for engineering skills will actually be very
different in the longer term. Kaspura (2015) argues that the turbulence of global markets has impacted on the engineering profession and introduced more uncertainty into their work futures. Much earlier, Bauman (2000, p. 161) also raised the possibility that highly qualified professionals can be exposed to uncertain futures in an era of liquid modernity with its “irresistible, indomitable pressure of ‘competitiveness’, ‘productivity’ and ‘effectiveness’.”

My sense from the statements of some engineers in my study is that they perceive organisational downsizing and other restructures as affecting both their individual future and the quality of service delivery that their professional expertise contributes to the wider community. At the time these engineers commenced their own careers, many of them observed senior engineers occupying permanent positions in large organisations, usually in the public sector. In contrast, their accounts of their careers as mature practitioners illustrate more diverse arrangements in government, corporatised government organisations, small and medium-sized businesses, Australian and international consultancies and self-employment. These patterns of employment are consistent with Lloyd’s (1991, 2008) commentary on structural workplace changes for professional engineers.

I read the implications for some mature practitioners in these scenarios as being a loss of agency in the nature of their ongoing practice and their career decision-making. But numbers of engineers in my study can also be understood as saying that the master-apprentice mode of knowledge transfer is now outdated in most modern organisations, making it difficult for mature engineers to pass on their practice wisdom to younger engineers and to their wider professional settings.
Question 4

With the master-apprentice mode of knowledge transfer now outdated in most modern organisations, how could mature engineers cultivate elder roles and skills to pass on their practice wisdom to younger engineers and to their wider professional settings?

The desire to pass on knowledge emerged as an important finding from the interviews. It appeared as a theme in its own right in Chapter Four, passing on knowledge, and was further explored in the motif of becoming elders (Chapter Five). The engineers’ commentaries identified changes in modes of learning and knowledge transfer since their early careers of developing their practice on-the-job under the guidance and mentorship of senior engineers in strongly hierarchical engineering-based organisations.

This was not a set of issues anticipated as important in the early exploration of literature that helped to drive the design of this thesis study. However, from the macro level perspective of social policy, knowledge transfer from mature engineers can be theorised in terms of intergenerational relationships. As already noted under Question 2, the statements of the mature engineers in this study did not reflect the burden discourse of ageing populations and they seemed keen to contribute their knowledge, skills and practice wisdom to a new generation of engineers as well as to their organisations and fields of practice. Knowledge transfer from mature to younger engineer shifts the framing of intergenerational equity from perceived inequities of burden, conflict and competition (Australian Workforce and Productivity Agency 2013; Commonwealth of Australia 2010) to contribution and collaboration.

In this space, the concept of generational intelligence offers useful insights into how a greater reflexivity about one’s own positioning within a generation and sensitivity to the perspectives and experiences of people in other generations could benefit intergenerational relationships and mutual learning (Biggs, Haapala & Lowenstein 2011; Biggs & Lowenstein 2011). And according to Biggs & Lowenstein (2011), acting with generational intelligence requires foregoing the assumption that the one’s own
generation is the most important and entitled to be dominant. This theoretical perspective opens up learning spaces where mature practitioners are not just imparting their knowledge but also engaging with less experienced practitioners in mutual learning opportunities and enriching practice development for all parties.

From an organisational and human resources management perspective, Rau and Adams (2013) also point to the importance of a knowledge-sharing culture which is intergenerational. When I returned for a closer examination of their theoretical review of strategic management approaches to older workforces, I discovered that they addressed the issue of knowledge transfer from older employees in the context of succession planning to prevent loss of critical knowledge from organisations. Rau and Adams suggest a range of knowledge transfer tools including documentation into repositories of knowledge and interpersonal transfer processes, recognising that the processes used would vary according to the nature and needs of the organisation. They also note the need to establish “a culture that encourages and values knowledge-seeking on the part of the younger workers and knowledge-sharing on the part of the retiring workers” (p. 126). This recommendation draws attention to the importance of the receptiveness of others to learn from mature professionals as knowledge custodians for successful knowledge transfer. If the notion of a knowledge-sharing culture in organisations is linked to the rationale for generational intelligence, then this opens up the potential for mature practitioners to participate in multi-directional flows of knowledge transfer and learning. Such a framework offers possibilities beyond the one-way flow of practice wisdom that was the focus of the engineers’ more traditional approach to knowledge transfer and mentoring.

**Question 5**

*How can continuing professional development be reimagined and revitalised for mature engineers in the later part of their careers?*

Continuing professional development in the context of this question refers to the ongoing development of knowledge and skills and roles in professional practice. Here it represents a broader concept than the more usual definitions of continuing
professional education (CPE) or continuing professional development (CPD) that are used in connection with formal requirements for maintaining professional competence, registration or accreditation.

Studies have found that older workers are interested in further training opportunities, particularly for higher skilled workers (Chandler Macleod 2013; Millward & Brooke 2007). Platman (2004) suggested that self-employed professionals, specifically, can find it difficult to keep their skills current. Phillipson (2011) and the Australian Human Rights Commission (2010) also note that access to training and ongoing professional education opportunities could be an issue for mature-age workers, with many employers perceiving training for older employees as a poor investment. And a nationwide Australian study of employers and jobseekers (Chandler Macleod 2013, p. 27) has pointed to employers in engineering-based industries not recognising the value of the expertise of their older skilled employees for training, coaching and mentoring roles to retain “intellectual property, corporate knowledge and skills”.

The engineers in the thesis study expressed interest in new developments in technology and accessed online training and attended educational opportunities provided by professional associations. A couple of engineers commented that it was difficult for them to find professional development opportunities in their niche area that could extend their expertise. The only participant who mentioned any difficulties with the cost of skills development was unemployed at the time of the interview. He said that that keeping up-to-date with technical skills and regulatory knowledge can be expensive and time-consuming and that new skills can soon be lost without opportunities to apply them. Most in this group of engineers had already continued their professional education by undertaking postgraduate study in engineering and/or management, typically in mid-career.

A study of other specific professional groups provides some clues to potential ways of approaching professional development in later career. The study by Oplatka (2007) examined the late career experiences of school principals aged 55 to 65 years. Through a lens of career stage theory, Oplatka highlighted “a high sense of professional
competence and expertise” (p. 363), along with “participative and considerate leadership” (p. 345), as distinguishing themes of their experience of later career. These themes also incorporate greater confidence in the competence gained from their extensive professional experience, and comfort in expressing a more authentic self that is grounded in their professional judgement and values. Themes of “enchantment and creativity” and “change initiation and implementation” (p. 345) were also features of the school principals’ earlier careers and Oplatka suggests that the participants might be motivated to convey a continuing sense of work attachment, energy and willingness to embrace change as a counterpoint to stereotypes of disengagement, conservatism and declining performance at older ages.

Oplatka (2010) subsequently studied another group of school principals in late career and again found through inductive analysis that a sense of heightened professional competence and confidence is a feature unique to the later phase of their professional careers. He draws attention to the “practical wisdom” of late career that is “related to the knowledge system of professional expertise and enabling profound insights, judgments, and performances” (p. 807). It is this practice wisdom that enables them to effectively deal with complex problems in their professional work. He conceptualises key tasks for professional survival in late career: to continue to demonstrate professional competence and visible professional success, and to counteract any decline in energy levels.

These two studies suggest that tapping into the sense of hard-won expertise and professional competence could provide potential avenues to reimagine and revitalise professional development for mature engineers in the later part of their careers. And further avenues for development could explore the sense of authenticity that can grow with a mature confidence in professional judgement value systems, as well as alternative forms of leadership or influence in later career.

They also shine some stimulating light on the question of whether there could be further professional development opportunities customised for those in later career around the roles, knowledge and skills that could continue to benefit them and others
in their profession, organisations or industries. Issues explored throughout Chapters Four to Seven cumulatively raise some deeper issues about professional development in maturity, issues that reflect the deep attachment of these engineers, not just to their own work but to their profession. These issues go beyond continuing technical knowledge development. Higgs and Titchen (2001a) have framed professional practice and professional practice development as involving the dimensions not just of knowing, but of doing, being and becoming. This rich framing is taken up in the next chapter of the thesis as a way of more deeply understanding the developmental challenges and opportunities that are increasingly relevant in a world where people live longer, work for longer, are better educated and likely to have a much greater variety of opportunities to make professional contributions across their entire careers.

**Question 6**

*With these engineers’ dominant images of retirement as stagnant and unappealing, and phased employment, self-employment and volunteer work envisaged as a means to extend professional life, are there glimpses into how professionals with a strong attachment to their work might negotiate their way to a new phase of life?*

My initial literature review suggested that many of those in the academy who were writing about working later in life assume that thinking about retirement will be a significant activity for those concerned. The literature review also drew attention to the dominance of rational decision-making theories in predicting the patterns and timing of the transition from work to retirement. Typically, the literature suggested that planning and preparation for retirement promotes better adjustment and satisfaction in retirement (Noone, O'Loughlin & Kendig 2013), although examination of retirement planning has often been limited to financial planning. Among those who have thought beyond the financial aspects of retirement are Sargent et al. (2011) whose research with people who had been retired for an average of three years highlighted the importance to them of exploring new horizons, searching for meaning, contributing on one’s own terms and putting one’s feet up.
The engineers I spoke with were generally not much interested in retirement, given their attachment to continuing their professional working lives. It is open to speculation as to how they might respond to being pushed into retirement and their capacity or preparedness to plan for a life without work. Their interest in prolonging their professional working lives shifted my focus to the practice and practice development of mature engineers. However, revisiting the literature review highlighted the changing tide in the way retirement itself is being understood in the literature. Instead of being experienced as an abrupt shift from being fully employed to being fully retired, commentators like Wang and Shultz (2010) suggest that full retirement might arrive more gradually as people take up options for bridge employment in the form of part-time or contingent work or self-employment. Platman (2004) suggests that full retirement might also arrive gradually for those in self-employment as their referral networks recede.

More recently, Sargent et al. (2013) have discussed the reinvention of retirement, in the context of life course theory. They conceptualised two forms of reinventing retirement that involve a blurring of the traditional boundaries between work and retirement. In one form the social construction of retirement remains as a distinct life phase but with a greater focus on how people could continue to be productive by contributing through paid work or unpaid activities. The second form of reinventing retirement dissolves the separate life stages to create new patterns and changing balances of work, leisure and family responsibilities. Activities that have typically been divided into stages and spheres of life become intermingled and responsive to changes at personal, organisational and systemic levels. If the model is considered in the context of the engineers’ experiences of later career and their focus on their ongoing relationship to their professional practice, reinventing retirement could also be framed as reinventing late working life. This is a very significant idea, since it invites reconsideration of the nature of work itself in later life, of what it means to be a mature practitioner and of what ongoing development of professional practice might incorporate, if it is to be something other than the gradual running down of the clock. This might include the construction of other pathways for influence and agency,
including promoting opportunities for mature practitioners to contribute their expertise in various ways to what Lee et al. (2011, p. 6) called “the social good”.

In earlier research with women, Everingham, Warner-Smith and Byles (2007) conceptualised such a period of the life course as a space where work can be refashioned to create an overlapping terrain between work and full retirement – if work is available. Their study of women’s patterns of transition from work to retirement also offers glimpses into possibilities that might create different patterns for professional men’s life course transitions. They theorised three models of retirement: an abrupt gateway model, a phased transitional model and a transformative transitional model. The gateway model is the traditional male breadwinner exiting from full-time work to leisure-filled retirement, which seems to be the model that most of the engineers were shying away from. The nuanced versions of transitional models might offer a window into how the engineers could approach the letting go of their full-time paid working lives. Everingham, Warner-Smith and Byles argue that the phased transitional model espoused by government policies to extend working life reflects a pattern of work that is already familiar to many women and it can be useful to maintain a work identity, to modify the balance between work and other demands or interests, and to test out a retirement lifestyle.

Everingham and her co-authors argued that women were likely to have an abundance of experience of adjusting to life transitions, fragmented work lives, blurred boundaries between paid and unpaid work, as well as balancing a range of obligations and interests. In contrast, the men in the current study are likely to find the shift from work to retirement an unfamiliar experience of life transition.

Interestingly, however, other studies of professional women who are working later in life suggest that women are becoming as deeply attached to work as their male counterparts. For example, the studies of Price (2000, 2002; Price & Nesteruk 2010) challenge the assumption that women are less invested in their paid work than men, and will not miss their work when they retire. They also establish that professional women, who have developed key aspects of their identity by working for several
decades, working late and transitioning to retirement – whenever it happens and whatever form it takes – are among the most significant stages of their lives. A more recent study of American professional women (Borrero & Kruger 2015) emphasises the importance to these women of carrying forward work key components of their professional identity, including maintaining social connections, engaging in continuous learning, and maintaining aspects of previous work roles.

These findings suggest that the later stages of professional careers for both women and men require fresh understandings. Everingham, Warner-Smith and Byles (2007) propose a new version of transition in their transformative model. Whereas the phased transitional model represents a continuation of familiar work but with fewer hours, the transformative model reflects a new shaping of engagement with work that promotes fulfilment, autonomy and control as well as allowing a satisfying balance with other interests. The model offers promise for both women and men to incorporate work into a transformed experience of both work and retirement.

As signalled already, ideas like these also highlight the opportunity to reconsider the nature of mature practice issues and what it means to know, to do, to be and to become a mature practitioner (Higgs & Titchen 2001a). The literature has identified challenges as well as possibilities that emerge at this stage of life and work. For example, Sargent et al. (2011) emphasise the loss of purpose, professional status and identity that can mark the last years of working life for men and their transition to retirement. And Ekerdt et al. (2001) suggested some while ago that it can be easier for men at this time of their lives to simply avoid or try to postpone thinking about issues that involve uncertainty and ambiguity. This point is taken up by Oplatka (2010, p. 810) who found that the school principals expressed little interest in discussing their plans for retirement “except some general thoughts about future work opportunities during retirement”. Oplatka speculated that the demands of their work left little time for such planning. Interestingly, this finding contrasts with one of the themes of his earlier study (Oplatka 2007, p. 345) in which the principals indicated a “changing focus to other life spheres” during late career and many introduced the topic of their transition to retirement into the interview without being prompted.
The opportunity that this thesis study represents is to learn from and build on the accounts of a group of men who seemed very keen to talk about what matters to them as professionals. This group explores the experience and views of mature professional engineers who mostly belong to the baby boomer generation. As noted at the beginning of this chapter, baby boomers have a reputation for inventing new ways of doing things, and they live at a time when changing demographics have forced ongoing debates about the financial and social relationships that modern global economies and societies want to have with their older workers. Phillipson (2013a) argues that we also need to develop theories capable of making sense of the increasing complexity of the links between the experience of growing older and working longer, on the one hand, and social and economic structures and policies, on the other. As the new cohort of older workers, baby boomers are understood to be more highly educated and likely to live longer than earlier generations, as well as:

- looking for a balance between work and leisure in their retirement – for greater self-fulfillment than the traditional model offered. They no longer want to work full-time, but they are not prepared to be ‘put out to pasture’ either. (Winston & Barnes 2007, p. 139)

In seeking extended and different opportunities for work, they are thought to be expressing needs that are just as much about social, emotional and intellectual fulfilment as they are about financial security.

**Listing the emergent dynamics and tensions**

By revisiting the initial literature that positioned the study, further significant insight was gained into what the two readings of the engineers’ interviews actually contribute to our understanding. Arguably, many aspects of the two readings that I offered as the researcher have been confirmed. And some of the dynamics and tensions of working as a male engineer later in life have been further defined and articulated. Even the reduction of the original 16 questions to six has produced a rich load of practice-based and theoretical insights. A listing of the insights gained to this point has been prepared and is presented below in tabular form.
The preparation of this table initially focused on the key dynamics of working late that the motifs and the six conceptual questions had tried to capture, and that were largely supported or extended by revisiting the initial literature. Each of the points in the table under the heading “Dynamics” begins with an action word, deliberately suggesting that something is happening that requires work: the engineers are making intellectual, emotional or some other kind of effort that engages them as professional practitioners. Each of the dot points under the heading “Tensions” suggests an ongoing engagement – or struggle – with opposing or contrasting behaviours, mindsets, ideas or circumstances. Such tensions are difficult to resolve, and so persist in drawing in energy over long periods of time.

Table 1: A summary listing of the work of Chapter Seven: the dynamics and tensions suggested by the two readings of the conversations with engineers and the revisiting of the literature review

**Question 1: What does it mean to be a mature engineering practitioner in later career?**

**Dynamics:**

- Being a holder of significant knowledge, both intellectual and practical, acquired over decades; acquiring authority from the hard lessons of history
- Using sophisticated knowledge to gain insight into a wide range of emerging, novel and complex issues
- Integrating theory and practical experience in ways that are tacit
- Exercising advanced competence: being an engineer’s engineer whose professional judgement allows them to contribute on their own terms
- Articulating concern for the public good

**Tensions:**

- Self-perception as craft experts at odds with the perspective that sees them as corporate human capital: a commodity for sale on labour markets
- Professional judgement challenged by organisational and public stakeholders and by other professional perspectives
- Wanting to be in control and accept ultimate responsibility for their work and career while autonomy and agency is increasingly contested
- Working out how far to go in challenging expectations and mandates of others
Question 2: How do mature engineers struggle with and deal with the desire for continuing influence and impact in late career? In particular, how do they negotiate the terrain of their attachment to work when they perceive their status as a “veteran” is no longer valued in the modern organisation?

Dynamics:

- Maintaining attachment to work in whatever way possible to ensure continuing use of expertise and contribution to public good, including both paid and unpaid/volunteer opportunities
- Adapting work arrangements to allow exercise of autonomy, flexibility, respect for experience
- Shifting to self-employment to circumvent negative age-based discriminatory attitudes and practices
- Learning new skills in self-employment to build and maintain work flow
- Living with uncertainties about future opportunities and pathways, as well as health status
- Embracing attitude of continuing careers rather than notion of working in retirement

Tensions:

- Will and intention to continue working is subject to others’ decision-making about provision of work, whether as employers or potential clients
- Negative age-based discriminatory attitudes and practices contradict the espoused value of mature professional experience
- Self-perception of critical value of knowledge and experience may not be matched by organisation’s evaluation of their importance, particularly if the knowledge is perceived as an easily acquired commodity
- Underlying unease when deep attachment to work is jeopardised by organisational and systemic influences on continuity of career
- Phasing down from full-time career through more flexible organisational working arrangements can be viewed as an unacceptable compromise of professional work quality, even if organisations offer options
- The desire to continue long professional careers is at odds with the dominant public discourse of older people being a burden
Question 3: What does it mean for mature practitioners if they not only doubt the future for their own practice but also believe that the future of the profession is being undermined?

Dynamics:

- Dealing with loss of agency and lowering of expectations for their own ongoing career development
- Trying to make sense of the signs of de-engineering of the profession
- Sustaining professionalism and high standards of professional engineering practice in modern employment settings

Tensions:

- Mixed messages about the importance of engineering as profession for productivity and innovation in the national economy in an era of liquid modernity with its pressures of commodification and global competitiveness
- Mixed messages about engineering and other technical skill shortages, exacerbated by retirement of baby boomers, and the turbulence of global and local markets that give rise to volatile shifts in demand for skills
- Weakening of influence and authority of mature engineers in the workplace when their knowledge and experience are treated as a commodity by employers
- Perceptions of the importance of their practice wisdom for future engineering practice are difficult for individuals to reconcile with the lack of structures for succession planning and knowledge retention

Question 4: With the master-apprentice mode of knowledge transfer now outdated in most modern organisations, how could mature engineers cultivate elder roles and skills to pass on their practice wisdom to younger engineers and to their wider professional settings?

Dynamics:

- Trying to work out relationships across generations to impart knowledge and tacit practice wisdom
- Needing to call on sets of skills for which professional development opportunities might not be available
- Being challenged to articulate tacit knowledge
- Pioneering new terrain of knowledge-sharing that was not part of their own professional tradition
- Using elder roles to retain influence, agency and impact
Tensions:

- Strong desire of mature practitioners to provide succession planning and other knowledge transfer is not necessarily supported by organisational practices and opportunities
- Uncertainties about remaining time in workplaces to pass on knowledge
- Potential of generational intelligence, intergenerational knowledge-sharing and “thinking together” is challenged by the need for effective communication skills and interest from mature and younger engineers, as well as support from employers
- Knowledge transfer as a contribution or legacy represents rejection of the ‘burden’ discourse

**Question 5: How can continuing professional development be reimagined and revitalised for mature engineers in the later part of their careers?**

Dynamics:

- Demonstrating professional competence remains important
- Engaging in professional development continues to be accepted as a professional responsibility for up-to-date technical competence and knowledge and a requisite for continued practitioner registration/chartered status
- Having insight into the nature of their ongoing development needs is likely to be curtailed by the traditional focus on technical and regulatory topics
- Valuing their own skill sets might entail inflation of their current worth
- Developing further technical expertise in later career can be limited by a ‘ceiling’ of advanced specialist knowledge

Tensions:

- Continuing professional mastery requires demonstration of energy, openness to change and innovative thinking to counteract stereotypical ageist judgements
- Applying integrated and extended practice wisdom to emerging new complex problems might call for new ways of managing personal energy
- Updating skills for further practice development and adaptation to changing technologies and regulations is problematic without workplace opportunities to apply the new skills
- Professional development opportunities in later career may be limited by employers’ attitudes to investing in staff training
Question 6: With these engineers’ dominant images of retirement as stagnant and unappealing, and phased employment, self-employment and volunteer work envisaged as a means to extend professional life, are there glimpses into how professionals with a strong attachment to their work might negotiate their way to a new phase of life?

Dynamics:

- Rejecting ‘not working’ in favour of continuing attachment to professional work
- Negotiating timing and pathways between full-time work and full retirement is not clear-cut and presents opportunities for reinventing both work and retirement
- Leading active, stimulating and productive lives is important to these professionals, whether through paid or unpaid activities
- Blurring the boundaries between work and retirement and reinventing notions of late working life and retirement

Tensions:

- Making choices between gradual or abrupt transitions from professional working life
- Being so attached to work that it is very difficult to contemplate life without work
- Personal choice of exit timing and strategy might be taken by others
- Strong desire and effort for personal control might, at the end of the day, be counter-productive

This summarised listing of the key dynamics and tensions of working late in life for the professional engineers involved in this study serves several key purposes. Firstly, it distils the key insights that have been developed through the first and second readings of the conversations I had with the engineers, enhanced and confirmed by revisiting the sort of literature introduced in the initial review. This table is the outcome of the work presented in Chapters Four to Seven.

Secondly, Table 1 suggests opportunities for using other – and different – kinds of theory to make further sense of the interpretive work done so far. The inductive perspective that guided the design of this study encourages a search for concepts and theoretical frameworks that can help to understand issues that have not been
acknowledged in the literature consulted at the outset of the study. It also encourages exploration of possible connections between issues that have not been described or explained by that literature. Often a fresh exploration of literature takes the inductive researcher down the path of different disciplines or cross-disciplinary perspectives. Or it might encourage the exploration of higher order theories that are capable of holding both phenomena and theory that are emergent, complex, ambiguous or paradoxical.

Thirdly, it suggests ways in which the dynamics and tensions associated with these mature engineers might relate to professionals working later in other fields of professional practice. Fourthly, it provides a bridge between the work of Chapters Four to Seven and the work to be presented in the remainder of the thesis.

Table 1 conveys the diversity, complexity and interrelatedness of the dynamics and tensions that emerged more clearly as I revisited the literature from Chapter Two to engage with six core conceptual questions that arose through my sense-making of the interviews with the engineers. There are emergent and connected issues that span multiple questions. For instance, mature practitioners are grappling with concepts of past, present and future when they recall life as it was, engage with life as it is and in various ways struggle with the uncertainty of the future. Similarly, their professional experience and practice wisdom from the past is shaping their present and future professional contributions. As individuals, the issues they are dealing with in later career are being played out in their inner world as well as the external world. Tensions exist between professional motivations in later career and personal motivations as a mature adult. These motivations may be unconscious and relevant theory would be helpful in shedding light on the experience of maturity in practice development.

Other theories would be helpful to make sense of whole careers that are practice-based and are now playing out in modern organisations that are increasingly fluid in their own responses to global trends. Such theories could possibly help this study contribute to new accounts of professional practice and professionalism in later life. And late career stages also call for understandings of the tensions of intergenerational practice and intelligence. Finally, in all these examples, individual, organisational and
systemic dynamics are interacting in a state of constant tension. Theories that can hold
the layers of macro, meso and micro dynamics are rarely attempted, and are often
criticised for trying to be theories of everything. However, any appreciation of the
connectedness of things demands that theorising – like practice – is not more
truncated or siloed than it needs to be.

So the next chapter identifies and uses a number of theoretical frameworks that are
sufficiently robust to hold the dynamics and tensions set out in Table 1. It is also
intended that the chapter offers both a broad and deep level of sense-making of the
phenomenon of mature practice development in later career that can be useful in a
range of other professional contexts. In this way, it hopes to make some of the
connections that have often been missing in earlier research and theorising.
CHAPTER EIGHT     THE POTENTIAL OF OTHER THEORETICAL FRAMEWORKS

Introduction

Chapter Seven tackled the essential work of revisiting the initial literature review and exploring how it could help to make further sense of the inductive work I undertook during the two readings of the conversations I had with the engineers. Sixteen questions that were crafted from the readings were focused into six core conceptual questions that, between them, mostly picked up the broad issues that the original sixteen had identified. The initial literature, and further developments within that literature since the initial review, were then explored in relation to each of the six questions. This proved to be an extremely helpful process. Not only did the initial literature throw some further useful light on the issues that were articulated through my interpretive work, but it also became clearer to me where I could look for fresh perspectives from other literatures, to make even deeper sense of the words of the engineers. As noted in Chapter Three, the conceptual work of the previous chapter and this chapter can be considered a third reading of the data set as the iterative process of interpretation continues to broaden and deepen the sense-making.

The construction of Table 1 is a major product of the work of Chapter Seven and a significant aspect of the contribution made by the thesis work overall. As a piece of interpretive work conducted in the context of an inductive study, it helped me to realise and articulate the diversity, complexity and interrelatedness of the dynamics and tensions that emerged as I revisited the literature from Chapter Two. As noted at the end of the previous chapter, issues were named that emerged from – and mostly spanned – the six questions. Mature engineers can be seen as grappling with the dynamics and associated tensions of past, present and future: when they recall and perhaps feel nostalgic for professional life as it was; when they experience the accomplishments and disappointments of their professional practice as it currently is; and as they contemplate what the future might hold for their profession, the potential and the uncertainty of that future, and their changing sense of agency to influence
those outcomes. Arguably, too, the accumulations of hope, attachment, disappointment and even indignation that are carried over from their whole career experience of professional practice are shaping the energies that engineers bring to their present and future professional contributions. In addition, the issues they are dealing with in later career are being played out in both their inner world and a perpetually changing external world, so that understanding of their challenges and opportunities requires insight into the deeper drivers of change. And these insights are more sophisticated and pervasive than the ways in which the engineers understand and portray them.

Indeed, deeper understanding of these drivers calls for frameworks that go beyond the immediacy of *how does this affect me as an individual?* (micro dynamics) to the complicated intertwining of organisational and profession-wide issues (meso dynamics) and system-wide (macro) dynamics. As noted at the end of the previous chapter, theories that can hold the layers of systemic, organisational and individual dynamics are difficult and rarely attempted, often being criticised for trying to be *theories of everything*. However, any appreciation of the interconnectedness demands theory that is not more siloed than it needs to be. At the very least, theories that explore the characteristics of contemporary organisations and workforces, and try to understand the impact of these environments on professional practice, would be helpful to explore the dynamics and tensions described in Table 1. Intergenerational dynamics in the workforce provide an example that was explored in Chapter Seven. Constructs centred on modern organisation provide another.

Finally, the dynamics and tensions set out in Table 1 invite an exploration of the nature of professional practice in later life, both for individuals and for groups of professional practitioners. As noted previously, consideration of professional practice – and particularly the possibility that practice continues to grow, not just regress or plateau in later life – has received little attention in the literature reviewed in Chapter Two. So it is easy to assume that practice wisdom inevitably declines for most people in later working life. The tacit nature of the accumulated professional practice wisdom of elders might also help to make that wisdom invisible to those who run organisations
and believe that knowledge can be commodified and easily replaced. Searching for
different sorts of theories, at this stage in my inductive study, was intended to help me
– and others – contribute to new accounts of mature professional practice and
professionalism in later life. It is also intended that the chapter suggests both a broad
and deep level of sense-making of the phenomenon of mature practice and its
continuing development that can be useful in a range of other professional contexts. In
this way, it hopes to make some of the connections that arguably have been missing in
earlier research and theorising.

This chapter describes the theoretical frameworks that I found when I went searching
for theories that could be sufficiently robust to hold the dynamics and tensions set out
in Table 1. To begin with, it seemed to me that there are useful connections to be
made between what it means to be a mature practitioner and what it means to have
reached a more mature stage of development in adulthood. The engineers’ strong
attachment to their work, reflected in their concerns for ongoing influence and
contribution, seemed to me to call for understandings of deeper human dynamics and
tensions. But the dynamics and tensions of working and living in later years also,
arguably, carry the legacies of the entire life course. At the same time, it is not just a
matter of ‘being an elder’, but of continuing to change and develop as a practitioner
and a person. I read into the words of the engineers I spoke with a desire to feel that
their competence, professional judgement and authority were recognised and valued; I
also interpreted a desire for fulfilling work that would enable them to continue to have
agency, influence and impact.

To answer questions that relate to the notion of being mature, I concluded that I
needed to draw on psychosocial theory of life course development that would connect
the ways in which individuals adjust and develop across the life span in response to the
changing challenges that are presented by the social world. Such a theory would also
need to describe and explain ongoing development in later life. I turned to Erikson’s
(Erikson 1963, 1968) seminal theoretical framework of eight stages of psychosocial
development, a framework that includes attention to mature phases of adulthood.
This framework held the potential to further understand the dynamics and tensions
drawn through consideration of the six conceptual questions, including the accumulated attachments and losses that practitioners in later career are experiencing or likely to face in the future.

The six questions also call for further understanding of the outer world as a context for professional practice and working lives. Theories of modern organisation provide interesting and helpful ways of exploring the impact of changes in workplaces and on the nature and status of professional life as an engineer in the twenty-first century. To understand more about issues relating to the wider context of changing professional practice for mature engineers in later career, I needed to explore theoretical understandings of the modern workplace and the implications for current and future professional practice.

The other strong strand of inquiry prompted by the six questions is the phenomenon of mature professional practice itself, and the nature of its ongoing development. By that I do not mean more of the conventional professional development that focuses on the application of discipline-based and technical knowledge to practice issues. Rather, I mean development that respects and engages with the ideas of mature professional practice articulated in the six questions developed through my interpretive work. This includes the enactment and particularly the ongoing development of mature roles as elders, mentors and knowledge custodians. This perspective has not received much attention in the mainstream literature about later working life. With this in mind, I turned to Higgs and Titchen’s (2001a) theoretical framing of professional practice and practice development as doing, knowing, being and becoming.

In summary, the six conceptual questions – and their associated dynamics and tensions – pointed to the need for deeper theoretical understandings of practice maturity as a stage of both career and life; to the wider context of the influence of the modern organisation on the changing nature of professional practice over the lifetime of these engineers; and to the nature of professional practice development in later stages of work.
Psychosocial concepts of life course development

This section of the chapter considers the potential of concepts that have been developed by theorists and researchers interested in understanding the psychosocial stages that an individual progresses through as they engage with the outer world from birth to old age. Erik Erikson (1963, 1968, 1997) brought to the field of psychology a seminal theoretical framework for understanding the psychosocial dynamics of human development over the entire life course. This was an ambitious and novel piece of work, given the focus of the era on understanding the development of the children and young adults who became known as the baby boomers. This was a period that was also focused on developing a workforce that was skilled, productive and able to take up the technical, economic and social opportunities presented by the post-war environment. Psychological and social understanding of later life and work was significantly underdeveloped.

As Erikson conceived it, an individual’s life course can be understood in terms of eight stages of maturation, each of which entails its own central and dominant developmental challenge. Each challenge was described in terms of a developmental goal that needed to be successfully negotiated, and a regressive consequence if it was not. More contemporary interpretations of his work would frame these challenges as a potential and ongoing source of struggle between competing tensions.

The first developmental tension can be summarised as a struggle between basic trust vs mistrust in the world, between feeling safe and supported versus feeling at-risk. What can be enhanced or undermined in this struggle is hope. The second developmental tension involves autonomy vs shame and doubt: feeling at ease with one’s capacity to act as an individual versus feeling ashamed of oneself and doubtful about one’s own rights and desires. The outcome of this struggle is willpower, or the lack of it. The third developmental tension was framed in terms of initiative vs guilt. An individual must engage with the tension between being assertive and exercising agency, as compared with simply following and feeling guilty for not taking the lead. In play here is purpose. The fourth tension centres on industry vs inferiority. It is about
feeling proud of achievements and confident about one’s own competence, as opposed to limiting and even stultifying fear of being unable to influence or accomplish things. At risk here is feeling competent.

The fifth developmental challenge was described as the creation of clear identity vs identity confusion: the tension between having a sense of one’s own boundaries and responsibilities and not being quite sure about how far one has to go to meet the expectations of others and be respected by them. At risk here is fidelity and a sense of belonging. A sixth and related challenge is that of developing intimacy vs isolation, where the capacity to be truly interdependent with others in order to learn is in tension with self-absorption, maintaining distance and self-sufficiency. Erikson spoke of the capacity for sustained love as being in play here, but it can also be understood as deep mutual trust and commitment in order to grow.

A seventh challenge involves generativity vs stagnation: the tension between creating and offering wisdom and energy to the world and to new generations, and simply withdrawing effort and failing to renew or replenish either one’s own energy or the energy of others. At risk here is the capacity and willingness to care. An eighth challenge is that of ego integrity vs despair, which is the tension between the ego strength of finding meaning and order in the face of the loss of one’s friends and loved ones, and also of death itself. At stake is mature wisdom born of fulfilment. After Erikson’s death at the age of 91, his wife Joan Erikson added a ninth stage to reflect the developmental challenges of very old age, where the wisdom gained through the previous challenge can be seriously compromised by the deterioration of body and mind. At risk here is the humility which recognises the ultimate frailty and vulnerability of the human condition.

A very useful feature of Erikson’s framework is that it can be applied to both life generally and to work as a subset of life. However, one of the major criticisms of Erikson’s work has been the suggestion that the stages follow a fixed linear progression. Certainly Erikson associated the stages with different times in the life course, and argued that a failure to find a ‘good enough’ resolution of any particular
challenge meant that the person’s subsequent engagement with other developmental challenges would be impeded. But in later commentary, Erikson implied that the struggles associated with the tensions of each challenge could not be effectively and definitely resolved for life. Rather he saw them as ongoing, reappearing and reshaped according to the continuing challenges of individual circumstances, including cultural, societal and historic contexts. He also saw them as a profound source of energy for human growth. A more useful understanding of the stages, then, is that the positives and negatives of each stage remain in counterpoint to each other and can undergo further development throughout the life course. And significant dynamic tensions and conflicts can reappear at any stage of life, disrupting usual patterns of engagement and creating possibilities for both considerable growth and considerable regression.

I was particularly drawn to Erikson’s idea that mature adulthood does not signal the end of individual development but is characterised by its own conflicts and developmental tasks. As noted already, Erikson’s thinking can be considered groundbreaking simply because it paid attention to development in adulthood, conceptualising the stages of adulthood to be “progress, not decline” and “a path leading outward” to wider social connections (Vaillant 2002, p. 43). Even the most conservative application of Erikson’s framework, which assumes that the seventh developmental challenge (generativity vs stagnation) encompasses the long period of mature adulthood, has immediate relevance to the issues raised by the engineers. Erikson’s concept of generativity highlights the key opportunity of nurturing and guiding the younger generation. The developmental strength of care is not only directed towards the younger generation but also to “the products, and the ideas” (Erikson 1997, p. 67) that a person has created or holds dear. During this mature stage of adult life and the following stage of late adulthood comes an awareness of the potential of legacy from a sense of “I am what survives me” (Erikson 1968, p. 141), which also stimulates new thinking about identity, whether or not this is done consciously.

I was interested, too, that in late adulthood, the eighth developmental challenge is postulated as a struggle of integrity vs despair. Its attendant strength of wisdom refers
to “accumulated knowledge, mature judgment, and inclusive understanding” (Erikson 1968, p. 140). In this phase, mature or durable hope accompanies integrity in “a sense of coherence and wholeness” (Erikson 1968, p. 65) of past, present and future, while despair reflects a loss of hope, along with the closing in or threat of multiple losses and acute awareness of too short a time remaining.

The dynamic tension between integrity and despair and the primary strength of wisdom can be interpreted in some of the vignettes and commentaries in this study. For instance, some engineers spoke of deriving satisfaction from integrating their careers’ worth of knowledge and skills as they try to understand problems and create solutions, while others spoke of having acquired a more holistic perspective of workplace and professional issues. In a different vein, a deeper wisdom about big picture perspectives could also induce a sense of despair about the implications they foresee of a de-engineered and depersonalised future.

Erikson (1968) also suggested that people may protect themselves from despair by a “pseudo-integration” achieved through “retrospective mythologizing” (p. 65) of their lifetime’s experiences, I found this idea very useful in articulating a sense of nostalgia which I had registered in reading the engineers’ accounts, but had not named or made explicit. I return to this idea later in this chapter.

However, focusing only on the seventh and eighth developmental challenges is a relatively narrow application of his thinking. Erikson himself suggested that generativity draws on all the energies and strengths from earlier developmental struggles in tasks of nurturing, caretaking, productivity, creativity, contribution and communality. Some of these earlier struggles can also reappear in new forms, stimulated by changes in the immediate and broader social context. The mature practitioner is faced with further identity challenges in response to new tasks and the realisation that fewer life choices now remain open.

Certainly the issues for the engineers appeared broader than those relating directly to mature adulthood as the seventh challenge of generativity vs stagnation and the
eighth challenge of ego integrity vs despair. Mentoring and other forms of imparting their knowledge to the next generation were certainly important, but they also expressed other desires, which reflect the range of tensions and struggles described in Erikson’s theorising of human development.

As suggested already, the life stage developmental challenges can be understood as not being resolved once and for all. Instead, they reappear at later ages and the strengths continue to be tested in maturity. For the engineers, the trust vs mistrust tension, for example, seems to reappear in their perceptions of the modern organisation and the strong sense of indignation carried by some of them. Yet overall the attendant strength or virtue of hope appeared to thread through their accounts, which embrace a future-orientation of “expectant desire” (Erikson 1997, p. 60) to continue active and productive lives, particularly through ongoing professional opportunities. Hope is present too in the anticipation by many of a successful shift from organisational employment to self-employment. And notions of agency, control and autonomy can be found in the struggle of autonomy vs shame and doubt. These notions provide deeper explanations for the experiences of work offered by the engineers in later career; their desire for opportunities to function autonomously in their practice and rely on their professional judgement is both tested and in tension with feelings of being devalued and marginalised by employers.

At another level, the tension in later life between holding on or letting go of a professional career in a liminal period between work and retirement, which has been evocatively described by Pelias (2016), can be understood as a basic and iterative struggle of human development that has its origins in early childhood. A sense of purpose and initiative appears in the engineers’ accounts of their desire for influence and impact and to “make a difference”, such as when one engineer spoke of the need to find a new life purpose to replace what work has provided. New roles and projects, along with transitions to self-employment, call for initiative but also can be accompanied by the fear and risk of failure.
Applying other elements of Erikson’s framework, competence as a practitioner can be read in the language that the engineers used to describe the meaning of work and aligns with the motif of *being a mature engineer*. Professional judgement and authority are perceived as growing from competence and the engineers spoke of the value of knowledge and skills they have gained through the experience of their long careers. The dynamic tension of identity vs identity confusion is also relevant to dimensions of mature practice that entail fresh struggles in recognising and responding to changing organisational and professional expectations and opportunities in later years of professional practice.

In summary, Erikson’s model of individual psychosocial development through the life course provides a helpful lens for responding to the set of six conceptual questions that I brought to my search for new literature. It offers a way of understanding the place of mature practice in a professional engineer’s career, as well as how mature practice might continue to evolve and develop. Desires for agency, autonomy, influence, recognition and contribution are basic to human development as well as to ongoing professional development; and so too are strengths such as hope, competence, care and wisdom. And just as mature adulthood is not a fixed or final state of being, but an ongoing process of challenges and development, so too is mature practice a continuing developmental process.

The lens of the Eriksonian theoretical framework opened up for me a way of understanding how challenges, conflicts and turbulence may originate from inner developmental struggles or from circumstances imposed from the outer world, including the workplace. The path of continuing personal and professional growth is not likely to be smooth and comfortable and individuals may not be conscious of the levels at which changes and transformations are taking place. I believe that it also offers a powerful lens for others who are interested in exploring the dynamics of mature practice and the development of mature practitioners. Indeed, other studies have drawn on Erikson’s theory of adult development, particularly the concept of generativity, that are important for responding to the six conceptual questions about
the developmental challenges for mature practitioners. The next section of this chapter considers some of them.

**Related ideas about the generativity of mature practitioners**

A framing of generativity that I found useful for adding nuance to the concept of engineers as knowledge custodians came from Vaillant’s (2002) longitudinal study of adult development. That study was explicitly based on Erikson’s eight stage model. It conceptualised the challenges or crises of each stage in terms of mastery of developmental tasks and an expanding social radius. Vaillant suggested that generativity encompasses care and guidance of younger generations and support for their autonomy, along with building community. He also refined Erikson’s notion of generativity by distinguishing the relationship-based roles of teaching, guiding and mentoring younger individuals from higher-order generative cultural roles such as *Keepers of the meaning* (Vaillant 2002, p. 48). In my own study, many highly skilled professional engineers, with a lifetime’s accumulated knowledge and practice wisdom, talked about a desire to pass on knowledge and practice wisdom to younger engineers in their workplaces in knowledge custodian roles through teaching and individual relationships. But they also spoke of wishing to ensure their knowledge can be retained in corporate memory, in industry standards or in the professional canon of knowledge. These latter custodian roles seem to align with Vaillant’s notion of *Keepers of the meaning*, who preserve cultural traditions and link the past to the future in a radius of concern that extends beyond their familiar community to a broader world. This nuancing of generativity offers an approach to responding to Question 4 in the core conceptual questions as it helps to illuminate the diversity of roles that mature practitioners could engage with to create a legacy of their knowledge and practice wisdom.

Another source of deeper insights into mature adulthood and later working life from an Eriksonian perspective came from a recent narrative study of philanthropists (Maclean et al. 2015). The study explored how identities of entrepreneurial philanthropists transform through a developmental journey of *setting out, wayfinding*
and home-coming. It was the home-coming phase or “mature stage of the journey” (p. 1636) that shed further light on the engineers’ experiences of mature practice development and connected with Erikson’s notion of generativity. In this mature phase, the study found that the philanthropists’ dominant concerns included generativity and succession planning for the future. The researchers’ theoretical contribution blends agentic and community-oriented desires for the individual to create a meaningful legacy of the self. Agentic desire, according to McAdams (1993), refers to an individual’s efforts to influence or exercise control over the shaping of their identity and their projects in the world; and community-oriented desire can be understood as desire to nurture others, to assist them or be of some important use to them. McAdams elaborates on the communal dimension of generative desire in this way:

By doing our part to make the world a better place for those who follow us, we contribute in positive ways to something that is bigger and more enduring than any one of us (p. 232).

The theoretical insights from Maclean et al. (2015) and McAdams (1993) relate to the six core questions I have framed because they provide support for the idea that mature practice can be experienced as an ongoing process of development for professionals. They point to the underpinnings of ongoing individual needs as well as potential societal benefits when practitioners seek to make a contribution to benefit the wider community. And the concept of a generative legacy of the self also provides a deeper level of interpretation of the engineer’s expressions of desire to ensure their knowledge and practice wisdom can live on as a contribution to the future.

Together these studies point to the potential importance of generativity and development to mature practice, but they have not placed the spotlight on individual professions or mature practitioners. And while mature practitioners may be understood to desire and benefit from ongoing professional and personal development through their work, the modern work environment provides many challenges and impediments to such fulfilment. For mature engineers in my study, their inner world of mature practice development and their outer world of a
professional career in the contemporary world appear to exist in a dynamic and uncomfortable tension. Such profound changes to professional practice and the demands for new ways of working also can lead to feelings of loss and nostalgia.

Joan Erikson reflected on the how individuals are challenged again by renewed struggles with each of the eight developmental tasks and strengths as they confront multiple losses and the threat of despair.

Toward the end of this demanding period one may feel an urge to withdraw somewhat, only to experience a loss of the stimulus of belonging, of being needed .... However, not being needed may be felt as a designation of uselessness. When no challenges are offered, a sense of stagnation may well take over. (Erikson 1997, p. 112)

This understanding of loss provides a lens for interpreting the impact of both changes in the nature of professional practice over the space of a career and the losses or potential losses that can accompany the period of mature practice. As an example, the lens of loss deepens interpretation of the implications for mature practitioners when they perceive they are being squeezed out of the sphere of influence, to use one engineer’s words, and are struggling to retain a sense of agency, influence and impact through their professional work.

Loss can also be conveyed through nostalgia, which Erik Erikson (1968, p. 65) described as “retrospective mythologizing”. As noted earlier, Erikson conceptualised this behaviour as a protection against despair in later life. Telling stories of the good old days in workplaces is an example of retrospective mythologizing. Such storytelling has also been conceptualised in organisational studies as nostalgia (McDonald, Waring & Harrison 2006), as organisational nostalgia (Gabriel 1993) and, more specifically in university settings, as academic nostalgia (Ylijoki 2005). The concept of nostalgia points to an interpretation of how professionals might voice their resistance to unwanted modernisation of professional practice and their working world. Ylijoki (2005) built on Gabriel’s (1993) theory of organisational nostalgia and brings some fascinating insights to the purpose of nostalgia for mature professional employees. In her study of senior researchers in universities in Finland, academic nostalgia refers to
the perceived “loss of academic freedom and autonomy in work” (Ylijoki 2005, p. 555). She argued that it is not important whether the earlier professional life was as halcyon as they remembered: what is important about nostalgia is that “it clarifies the core values and the moral order of a given community and makes visible the underlying tensions between the old and the new” (p. 571). Seen through this theoretical lens, nostalgia in the form of professional nostalgia can clarify for mature practitioners what they consider to be most important to impart to others as part of their role as elders of the profession. As an example, one engineer’s use of nostalgia sheds light on the high importance he places on the value of loyalty and also the generative role of mature engineers:

> When I was young in the place many senior engineers took the trouble to coach and teach me, and I’ve always been very grateful for that. And that’s why I try and do that myself for the younger people now – that’s a loyalty type thing. (#30Org)

Professional nostalgia offers another very useful tool for making sense of the tensions experienced in contemporary professional practice. For instance, engineers in this study spoke of their frustration at the increase in bureaucratic and broader governance processes of accountability where once the authority of an engineer’s say-so was sufficient for decision-making. Professional nostalgia also provides mature practitioners with an agentic way of expressing their discomfort with many aspects of government policy and organisational change that confront them in their current practice, a means to retain their core values of professionalism that have underpinned their continuing sense of professional worth and a sense of belonging to a small community of “survivors”. The motif of indignation can also be further understood through the lens of nostalgia because the perceived “devaluing” and “shafting” of mature engineers can represent a further contrast with times gone by. From this perspective, professional nostalgia provides a vein of interpretation for responding to many of the conceptual questions. It also offers a bridge to consideration of other, different theories. In the next section, I introduce concepts that have been developed to explain how the modern workplace is changing as a setting for professional practice,
throwing into even sharper relief the ways in which changes in the external world can trigger new developmental challenges and energy, as well as re-kindling older ones.

**Professional practice settings: the modern workplace**

This section introduces perspectives on the changing nature of professional practice settings over the career span of the engineers in this study and the consequent challenges and opportunities for professional practice and continuing practice development. The signs of these changes were articulated by the engineers themselves and captured in themes described in the first reading, particularly being older in the work place, passing on knowledge and de-engineering as a changing context. It was captured also in the motifs I constructed, particularly indignation, and across the conceptual questions, especially Questions 2 and 3:

> How do mature engineers struggle with and deal with the desire for continuing influence and impact in late career? In particular, how do they negotiate the terrain of their attachment to work when they perceive their status as a “veteran” is no longer valued in the modern organisation? (Question 2)

> What does it mean for professional practitioners if they not only doubt the future for their own practice but also believe that the future of the profession is being undermined? (Question 3)

The tensions created by changing practice environments also can be directly related to the issues of psychosocial development explored in the previous section of this chapter.

There have been many analyses of the nature and extent of changes in working environments since the middle of the twentieth century. These include literatures that offer extensive exploration and critique of evolving forms of organisation across its many dimensions: strategy, structure, staffing, financing, operational processes, management and governance, as well as communication and technology. They describe the progressive convergence of organisational design and functioning towards an increasingly standardised form that was initially seen in corporations and government. Known colloquially as managerialism, sociologists have dubbed it *modern organisation* (Drori, Meyer & Hwang 2006). It values explicit protocols, elaborate
governance and risk-management, clear accountability and performance management, and generic management capabilities. The success of modern organisation is generally attributed to its capacity to engage with an increasingly complex world and to manage the associated risks.

Modern organisation has proliferated over the past twenty years to the point that it is now practised in most countries that expect to interact with the rest of the world. It is the preferred approach to organising and running medium-sized businesses, not just corporations, and across all industry sectors. It is the template used by public administration at all levels, by social enterprise, the non-profit sector, the military, sports administration, leisure and arts organisations and educational institutions from pre-school to university. Even small-scale community groups increasingly are expected to be accountable and orderly in ways that reflect the language and practice of modern organisation.

The concept of modern organisation provides an important lens for understanding significant changes in the environment of professional practice, because “the modern organisational environment significantly challenges, blurs and destabilises understanding of the ways in which managers and professional practitioners exercise authority and discretion” (Cherry 2016, p. 197). Increasingly, professional practitioners of all kinds either work for, are contracted by or must work closely with modern organisations that create what is arguably a very different kind of practice environment from that of even forty years ago. While this has a number of implications, a key one for this study is the way modern organisation creates an authorising environment that is increasingly the same for all staff and suppliers. In another time, the judgment and mandate of doctors, lawyers, scientists, engineers and a host of other university-educated professionals carried a weight that was backed up by professional bodies that themselves carried significant status and power. This was further enhanced by community respect and trust in professional people.

However, modern organisations are now increasingly staffed by well-educated people with many different skill sets, none of whom is necessarily privileged by professional
status to have the last or defining word. Rather, they all speak a common global managerial language and are expected to be able to add value according to the accepted protocols of getting things done. And there are strong expectations that decision-making at many levels can be undertaken systematically through meetings and discussions, often within the frame of well-understood project management protocols. It is also expected that decisions can be rationally explained and defended if things go wrong. In this environment, everyone is a professional (Wilensky 1964).

As a result, professional practitioners in modern organisations must often engage in multi-disciplinary teams across blurred boundaries, where most employees are considered to be ‘professional’, and where an individual practitioner is expected to be able to negotiate using generic managerial language and to explain their decisions with a rational justification and within standardised processes.

For mature engineers whose careers developed in hierarchical engineering-based organisations with an engineering leadership, the exercise of influence and authority will feel very different. With everyone considered to be a professional, engineers can find themselves having to negotiate with marketing, accounting and human resources departments, without their own professional knowledge being privileged in their interactions.

Concerns about de-engineering, explicitly identified by some engineers in this study, make a great deal of sense when seen in this larger context. If everyone is a professional, then some are inevitably deprofessionalised. Engineers are not accorded special status in decision-making and some aspects of their former engineering roles are being filled by employees without engineering qualifications and experience. Moreover, competent performance requires a wider range of skills than their engineering training might have prepared them for as they find themselves working within and across modern organisations where “meetings as information and decision forums are the order of the day, where skills in marshalling facts, communicating them skilfully, framing agendas and negotiating with persuasive logic are very important”
(Cherry 2016, p. 202). As Trevelyan (2014a) and others have pointed out, technical expertise is no longer sufficient to be an effective practitioner.

Some engineers in this study persisted with the idea that they should be able to go back to their technical roles and leave the rest of the arguing and politics to others. But within modern organisation, managers and professional practitioners are involved in a continuing renegotiation of the limits of their authority and discretion. How practice was traditionally performed in the past may be remembered with nostalgia, but is unlikely to return in the current operating environment.

The phenomenon of deprofessionalisation, which has been taken up by some commentators (Evetts 2009, 2011; Fenwick 2013; Higgs & Patton 2014; Schön 1983), also provides a larger context for understanding the concerns the engineers had for the future of their profession. More than 30 years ago, Schön (1983) identified critical challenges to the credibility and status of the recognised professions. And more recently, Higgs and Patton (2014, p. 11) have posited that traditional notions of professionalism are under threat from influences such as “market liberalism and commercialism” and “commodification of professional labour”, which are influences that some of the engineers identified in this study and I highlighted in the motifs.

**Theories of professional practice and its development**

This section highlights theories that provide perspectives for understanding professional practice and its development: perspectives that explicitly describe aspects of practice and practice development that are essential if engineers are to sustain or recover enough agency to engage with the realities of modern organisation.

The idea of what constitutes a profession has attracted long-standing interest but most traditional descriptions have included the elements of occupational practice based on approved disciplinary knowledge, technical protocols and explicit standards of behaviour, which are monitored by members of associations who also set and apply standards of entry for membership. However, as the earlier discussion of modern organisation indicated, contemporary organisation practice blurs the traditional status
of what a profession is and what constitutes professional practice, just as it confers on front-line service staff the titles of ‘consultant’ and ‘executive’. The acquisition of skills and knowledge through higher levels of participation in university education reinforces the sense that the building blocks of many careers are technical competencies and graduate attributes that can be applied across a range of occupational settings.

Interestingly, as these developments have implicitly challenged older understandings of profession, professionalism and professional practice, some educators have quite explicitly suggested ways in which traditional understandings need to be challenged. At the very least in the deprofessionalised world of modern organisation, Higgs and Titchen (2001a, p. 8) have suggested that for practitioners “to be competent is no longer enough, and to work, even with very high levels of competence, in the absence of effective interaction with others and the environment is to limit the quality of professional services and contribution to society”. And the imperative for traditional professions to confront change in an uncertain world is suggested by Higgs (2016a, p. xii) in her argument that the dual phenomena of professional practice and professional discourse are both “facing challenges as they negotiate their contested spaces in a rapidly changing global society”.

Higgs and Titchen (2001a, p. 4) have defined professional practice as comprising “knowledge-in-action”, in other words, the interaction of doing and knowing or, in Schön’s words, “knowing-in-action” (Schön 1983, p. 50). Practice wisdom is a key component of developing competent professional practice and becoming a mature practitioner. It entails a process of accumulating experience of knowledge-in-action and applying critical and creative thinking for responses and decision-making in complex and novel situations:

*Practice wisdom is the possession of practice experience and knowledge together with the ability to use them critically, intuitively and practically.*
(Titchen & Higgs 2001, p. 275)

Arguably the dimensions of *knowing and doing* are reflected in the motifs, especially those of *being mature engineers* and *becoming elders* described in Chapter Five. The
engineers in this study were still very actively involved in knowing and doing as they retained their motivation for challenging work, for exercising their professional judgement in response to complex practice demands, and for enacting roles as knowledge custodians. The development of practice wisdom also provides a useful way of understanding the meaning of professional judgement and authority, dimensions of mature practice that were identified as important to many engineers in this study and involve “knowledge born of wisdom of experience, precedent and eldership” (Ewing & Smith 2001, p. 18). The mature practitioner is likely to be able to exercise professional judgement more competently than less experienced practitioners as they bring together their knowledge sources from technical knowledge, experience-based tacit knowledge and understanding of diverse contexts for decision-making in new, complex and ambiguous situations.

However, because practice wisdom often calls on tacit knowledge grounded in “lengthy exposure to similar situations through which unconscious associations are established between certain features of cases” (Scott 1990, p. 565), it can be difficult for a mature practitioner to unpack and explain or demonstrate practice wisdom to others. Like expert athletes or artists who make extremely difficult things look easy, engineers might inadvertently make the difficult look obvious. The notion of practice wisdom thus supports an interpretation that the engineers in this study face a dilemma: that most of the knowledge that they wished to impart was “in their heads” and difficult to specify and articulate, yet this less tangible knowledge was what was most important in competent practice.

The dilemma is heightened by the earlier discussion of modern organisation. Expert practitioners of all kinds in the complex working world of modern organisations require high-level communication, collaboration and negotiation skills to interact effectively across a diverse range of stakeholders belonging to different disciplines, organisations and other affiliations (Johnston, Lee & McGregor 1996; Trevelyan 2014a). And so engineers need to draw on wider discourses to practise effectively in the complex contemporary context of social and environmental responsibility, community consultation, and multi-disciplinary teams.
All this suggests that the professional practice of engineers – and its continuing development - calls for much more than technical expertise. Indeed, the issues raised so far suggest both significant opportunities and challenges for the professional development of engineers. Some in the engineering profession have called for engineers to gain the skills to move into executive leadership roles to be able to compete for influence in the modern organisation (Lloyd 1991, 2008). And considerable efforts have been made in recent years to broaden the education of engineers but Trevelyan (2014a), along with the commentaries of the participants in the present study, indicate that its dominant discourse continues to be based in technology and science. Like Johnston, Lee and McGregor (1996) nearly 20 years earlier, Trevelyan argues that engineers need concepts and language to express the rich diversity of the dimensions of knowledge and practice that their work entails to overcome the continuing perception that only technical work is “real engineering” and to convey the value of engineering to society. In The making of an expert engineer, Trevelyan (2014a) draws on interviews and field observations with experienced practising engineers. Trevelyan was intrigued that engineers themselves are unaware of what constitutes the nature of engineering practice and that the processes of engineering are invisible even to those engaged in the work. As noted in the section on the modern workplace, Trevelyan challenges the notion held by many engineers that “real engineering” is essentially technical, arguing that for effective solutions to be adopted, expert engineers require highly developed skills and knowledge to listen, collaborate, educate, manage and influence other people.

Some engineers in this study were aware of this difficulty in the workplace. As one said: “If you’re writing something technical for someone with an accounting background and you can’t communicate with them, the whole bloody thing’s failed”. But the theoretical framework offered by Higgs and Titchen (2001a) raises the bar even further. They argued that professionals cannot just be thought of as knowing a great deal and using it to do things in practice situations. Rather, in an age of increasing ambiguity and complexity, practitioners must also be aware of – and continuously hone – their understanding of:
their role and of the broader people-centred context of professional practice ... and incorporate all of these understandings, skills and learnings into their actions. For this reason, we present professional practice as a lived experience, a service for (and with) others and a way of being and behaving. (Higgs & Titchen 2001b, p. viii)

They offered a model of four interrelated dimensions of doing, knowing, being and becoming that comprise professional practice. The dimensions of being and becoming draw attention to a continuing developmental process for practitioners where the professional self and personal self are brought into enactment of practice and continue to grow with maturing practice. Further insight into understanding the interrelatedness of these dimensions can be drawn from the conceptualisation by Morgan (1983b, p. 405) that “the process of knowing involves a process of forming and transforming, and that in knowing our world, we also form and transform ourselves”; in this way, knowing and becoming interact and grow together.

Titchen and Higgs (2001) argued that the mature practitioner needs to be able to think about and articulate their own processes of doing and knowing – their practice wisdom – and to re-consider them in the context of the formal and informal roles which they occupy, the expectations and obligations that have come to be associated with those roles, and the broader ethical and social implications of what they do and how they do it. This kind of reflective work is in itself a skill to be learned. Schön (1983, p. 268) refers to this approach as “reflective conversation with the situation”. Reflective practices also require an awareness of the limits of expertise and a willingness to be open to other ways of thinking and cross-fertilisation from others. Schön’s seminal concept of the reflective practitioner contrasts the expert’s understanding of competence as “I am presumed to know, and must claim to do so, regardless of my own uncertainty” with that of the reflective practitioner as “I am presumed to know, but I am not the only one in the situation to have relevant and important knowledge. My uncertainties may be a source of learning for me and for them” (p. 300).
Reflective practice also requires a language for thinking and communicating. As Higgs et al. (2016, p. 125) suggest: “language significantly shapes our reality – we see the discourse of our disciplines in the world and the world we see is shaped by the discourse of our disciplines”. A diversity of available discourses is needed for “reflection-in-action” whereby practitioners “can surface and criticize the tacit understandings that have grown up around the repetitive experiences of a specialized practice, and can make new sense of the situations of uncertainty or uniqueness” (Schön 1983, p. 61). These ideas have particular relevance to the mature practitioners of the current study and the six conceptual questions that have emerged through the inductive process. With greater access to nuanced language to assist their own reflective practice, mature practitioners have the potential to contribute more productively and creatively to conversations concerning major societal issues and to be more effective in roles as knowledge custodians. The additional benefit of a reflective discourse is that practitioners are then better able to articulate and impart their practice wisdom to others.

But some commentators have identified fundamental difficulties for engineers who have themselves privileged technical wisdom over “a reflexive consciousness of the contexts and consequences of their practice” (Johnston, Lee & McGregor 1996, Sect. 7), and over the communication and negotiation skills mentioned earlier. When professionals wish to function solely as rigorous technical experts, they can end up excluding themselves from the biggest and most important human challenges because such challenges are inherently complex and messy and cannot be solved by the traditional problem-solving approach of “technical rationality” (Schön 1983, p. 39). While that is likely to be particularly true for the generation of engineers who participated in this study, some argue that things have not changed a great deal. The work of Johnston, Lee and McGregor (1996, p. 128) from only twenty years ago, suggested that the dominant science-based discourse of engineering continued to hamper “engineers' capacity to examine the social meanings and effects of their work and to self-consciously reflect upon their practice and professional identity”. They also argued that the mainstream discourses of engineering lack the linguistic tools to name,
notice and analyse the complexities and nuances of the contexts in which they practise.

These arguments have been repeated much more recently by Trevelyan (2014a). He argues for the importance of self-understanding and understanding others as essential to effective engineering practice. He further argues that practice is problematic when engineers equate information transfer with communication and assume that logical explanations are all that is needed. Truly expert practice requires skills to listen effectively, understand the meanings and language used by the range of people that they collaborate and negotiate with, and use language that is understood by those outside their profession. Indeed, Trevelyan believes that engineers are typically perceived by other professions as being “challenged” in terms of communication skills (p. 199). This window into the profession sheds further light on the profession’s struggle for a place at the decision-making table in the practice settings of modern workplaces.

Trevelyan (2014a, p. 535) also relates the following complaints that experienced practitioners made during his research and they align with accounts I heard from engineers in my study:

Engineers complain that they are underpaid, that they are passed over for promotion by others without engineering qualifications, that they find themselves working for managers without engineering qualifications or knowledge, and that their opinions are not sought on matters with engineering implications.

He concludes that if engineers are to regain respect as a profession, then they need to be able to understand the perspectives of investors, clients and wider society, as well as clearly articulate the value of their work.

It is worth speculating that the capacity of engineers to reflect on their practice is likely to be significantly impacted by their university education and ongoing professional development and the cultures of the settings in which they practice. For both mature engineers and their younger colleagues, formal and informal learning environments are very important in shaping, challenging and reinforcing practice. Communities of
practice have been theorised as spaces where practice development can be stimulated at all stages of career, across generations and across disciplines.

The initial theoretical work of Lave and Wenger (1991) in this area has been further developed by Wenger (1998), Wenger, McDermott and Snyder (2002) and by others such as Ardichvili, Page and Wentling (2003) and Higgs and Patton (2014). Communities of practice can be defined as “groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis” (Wenger, McDermott & Snyder 2002, p. 4). They can be established within formal workplace structures but more commonly evolve as informal groups around a connecting interest. The concept of communities of practice has included understanding how new members of a profession or occupation can learn to become competent and fully participating practitioners, with learning theorised as a process of social participation rather than a cognitive phenomenon (Higgs & Patton 2014). Communities of practice have been taken up by organisations for the purpose of knowledge management, sharing and retention (DeLong & Davenport 2003).

In communities of practice, the elders of the profession – called “old-timers” by Lave and Wenger (1991) – have advanced practice expertise and perform an important role in the professional growth of incoming practitioners and the establishment and development of practice communities. Initially, little attention was given to the ongoing practice development of those who hold the practice wisdom and expertise in these practice communities. Instead, they were seen through the lens of their usefulness to “newcomers” (Lave & Wenger 1991) rather than as a focus of interest in their own phase of career. However, Wenger (1998) later described the interaction of novice and mature practitioners as a complex generational encounter in which each brings their own perspective and, with an open attitude, can potentially positively influence each other’s future trajectories and that of the community of practice they belong to.
In common with the thinking of Rau and Adams (2013) mentioned in the previous chapter, very recent literature is also illuminating the importance of knowledge reciprocity across generations in the workplace from the perspective that knowledge retention is not merely the transmission of knowledge from an experienced sender to an inexperienced recipient (Burmeister & Deller 2016; Higgs 2016b; Holian 2015). Pyrko, Dörfler and Eden (2016) have coined the term “thinking together” for intergenerational approaches to knowledge sharing and collaborative learning in communities of practice.

A feature of communities of practice that offers a further useful theoretical insight is peripherality in contrast to full participation (Lave & Wenger 1991). The notion of peripherality is mostly considered as the position of newcomers in a community of practice, as well as a position that less engaged members might adopt, particularly if their membership overlaps with other communities. I would argue that there could also be useful peripheral roles for mature practitioners as a progression from full participation. Wenger (1998, p. 216) pointed to this potential role when he discusses the value of “turning marginalities into peripheral wisdom” to provide alternative perspectives and challenge thinking of the community. In this sense, peripheral roles in communities of practice could be reconceptualised to offer a more nuanced interpretation of how mature practitioners might reshape their roles as elders in the professional space of their communities of practice. The theoretical perspective of communities of practice suggests a professional space where mature engineers might well need further skills and professional development to understand the nature of the knowledge they hold (Trevelyan 2014a) as well as the nature of their learning interactions with others and the possibilities for mutual growth.

In conclusion, the theoretical frameworks explored in this chapter have offered some explanations for the dynamics and tensions associated with mature practice and development identified through this thesis work and summarised in Table 1. They also suggest some formidable challenges and some very interesting possibilities for the development of engineers, and other professionals. The next and final chapter of this
thesis explores some of those possibilities, as well as setting out a research agenda that could help drive both theoretical and practical understanding forward.
CHAPTER NINE  WAYS FORWARD

Introduction

In the previous chapters of this thesis I have traced the research path from my initial framing of the research question, design of the inductive study, creation of the data set, iterative process of interpretation of those texts, and the development of the six core conceptual questions that guided my selection and use of literature to help make theoretical and practical sense of the conversations with the engineers. The context for my initial interest in the topic of professionals’ experiences of later working life was the increasing urgency in academic literature, in public policy-making and in the media advocating that older adults extend their working lives to reduce their assumed economic and social burden on younger generations.

My interest in how individuals are experiencing later working life was sparked in part by a gap in the literature, a gap that has since been highlighted by Taylor et al. (2016) in their call for a research focus on later working life itself – rather than the transition to retirement – along with a focus on the experiences of individuals in all their heterogeneity. More personally, my interest in the individual level of experience is grounded in my orientation to the perspective that life is lived by individuals – not by economies, societies or organisations. And from my professional background as a social work practitioner I take a holistic view of the person within the context of their environment. As a practitioner, my theoretical perspective understands an individual’s experiences and opportunities to be influenced by their environment at complex and interacting micro, meso and macro levels. Changes can be enacted at any level to influence the quality of life for an individual.

I turned the spotlight of my research onto professional engineers, an occupational group that is regarded as vital to economic growth and social progress. I then set out to explore how the experiences and perceptions of mature-age individuals in the engineering profession might be reflecting contemporary debates in public policy and the academic literature about extending working life. In practice, the conversations I
had with engineers suggested a complex set of issues about their experiences and insights into mature professional practice in a rapidly changing world. And these experiences and insights opened a window into the phenomenon of mature practice for those who are still attached to their work.

This final chapter concludes the thesis with a discussion of the implications and new possibilities for mature professional practice development, a proposed research agenda for exploration of further issues suggested by the richness of the data set from the engineers who participated in the study, and a reflection on the range of contributions my research offers to the field.

**Implications for practice**

I now return to the six conceptual questions (discussed below) that pointed to the dynamics and tensions I gleaned from the two readings of the data set in Chapters Four, Five and Six and that guided the eventual theoretical layers of interpretation in Chapters Seven and Eight. In view of the dynamics, tensions and difficulties that came to light through the two readings and further theoretical understandings, this section outlines recommendations that could offer new possibilities and enhance the experience of mature practice for engineers and other practitioners in later working life. And just as the questions are interconnected, many recommendations do not fall neatly under a single question but span multiple questions. Drawing on Table 1, which summarises the dynamics and tensions suggested by the two readings of the conversations with engineers and the revisiting of the literature review, I have included the tensions accompanying each question as they point to psychological and intellectual challenges for mature practitioners. As noted in Chapter Seven, each of the tensions suggests that mature practitioners can be engaged in or be grappling with unresolved – or unresolvable – behaviours, mindsets, ideas or circumstances as part of their attachment to ongoing professional work.

It should also be noted here that these recommendations were not influenced by the professional association that gave me access to circulate recruitment publicity to their
membership. Professionals Australia took a hands-off approach to the progress, direction and outcomes of my research.

The recommendations cover both organisational employment and self-employment, as did the six conceptual questions. The attributes of organisational employment (Org) or self-employment (SE) were part of the identifying codes I used for the participants and issues pertaining to self-employment were identified as part of the interpretation. However, I did not separately analyse the engineers’ perceptions and experiences according to their current working arrangements. The content of my conversations with those in self-employment spanned both their organisational careers and their experience of self-employment, with commentaries often enmeshing the two arrangements. They spoke of many similar issues about the engineering profession and working life in organisations, as well as pointing to many potential areas of mature practice development.

Question 1: What does it mean to be a mature engineering practitioner in later career?

\[
\begin{align*}
\text{Tensions:} \\
\text{Self-perception as craft experts at odds with the perspective that sees them as corporate human capital: a commodity for sale on labour markets} \\
\text{Professional judgement challenged by organisational and public stakeholders and by other professional perspectives} \\
\text{Wanting to be in control and accept ultimate responsibility for their work and career while autonomy and agency is increasingly contested} \\
\text{Working out how far to go in challenging expectations and mandates of others}
\end{align*}
\]

Being a mature engineering practitioner in later career entails a need for ongoing mature practice development, but this can be hampered by a lack of relevant professional development opportunities and employers shifting the onus for continuing development onto the individual. Recommendations here encompass development opportunities for mature practitioners to adapt to the dynamics of modern workplaces, as well as to articulate and advocate the value of their advanced competence, practice wisdom and professional judgement.
Mature practitioners could benefit from professional development opportunities to enhance their capacities and skills to communicate, collaborate and negotiate in multidisciplinary environments of the modern organisation, whether as senior employees or as self-employed practitioners. Such development opportunities should be customised for those who have advanced levels of professional authority and judgement and lengthy practitioner experience in organisational settings.

A challenge for mature practice is the development of skills for articulating and communicating the value of practice wisdom to others in organisations, whether to younger members of the same profession or to other disciplines, to line-managers or executive leadership in organisations, or to external stakeholders. Mature practitioners need skills in how to make tacit knowledge explicit, including how to bring their tacit wisdom to a conscious level so they can not only explain its value to others, but also for knowledge transfer and succession planning. They need to be able to highlight to diverse stakeholders from inside and outside the profession what others – and they themselves – take for granted.

Communities of practice can provide a space for mature practitioners to develop the skills and language to reflect on and discuss the nature of mature practice. These could take many forms. For instance, engineers could engage in communities of practice with their peers in a similar phase of personal and professional life to discuss issues of mutual interest and learn from those who are more highly skilled at articulating practice wisdom. They could also establish cross-disciplinary communities of practice with practitioners from other professions who have a professional lexicon and expertise in articulating tacit knowledge, such as education and health professionals. Intergenerational communities of practice could also stimulate mature practitioners to identify and articulate their professional wisdom as interested younger practitioners act as catalysts through their inquiry processes.
Question 2: How do mature engineers struggle with and deal with the desire for continuing influence and impact in late career? In particular, how do they negotiate the terrain of their attachment to work when they perceive their status as a “veteran” is no longer valued in the modern organisation?

Tensions:

- Will and intention to continue working is subject to others’ decision-making about provision of work, whether as employers or potential clients
- Negative age-based discriminatory attitudes and practices contradict the espoused value of mature professional experience
- Self-perception of critical value of knowledge and experience may not be matched by organisation’s evaluation of their importance, particularly if the knowledge is perceived as an easily acquired commodity
- Underlying unease when deep attachment to work is jeopardised by organisational and systemic influences on continuity of career
- Phasing down from full-time career through more flexible organisational working arrangements can be viewed as an unacceptable compromise of professional work quality, even if organisation offers option
- The desire to continue long professional careers is at odds with the dominant public discourse of older people being a burden

The recommendations that arise from Question 2 build on those outlined in Question 1 as the skills to articulate the value of mature practice are also relevant. For many wishing to continue their organisational employment, opportunities to extend working life can be limited by others’ ageist perceptions of their contribution and a devaluing of experience and mature practice wisdom. There is a challenge here for mature practitioners to remain engaged with current work practices and to be perceived as relevant to successful organisational outcomes. Nostalgic responses to change, while clarifying professional values and ethics as noted in the previous chapter (Ylijoki 2005) and creating a bond with surviving professional colleagues, also carry a risk of marginalising older professionals from the organisational mainstream or the main spheres of influence. Professional development is needed for professionals of all ages to cultivate emotional intelligence and generational intelligence to communicate and understand each other’s perspectives and contributions in the workplace and to foster what Pyrko, Dörfler and Eden (2016) call “thinking together”. This is taken up again in Question 4.
For older engineers who have been retrenched or prefer more autonomous and flexible working arrangements where their age and experience are valued, self-employment can present a viable pathway to ongoing influence and impact in late career. Such a shift requires additional skills to those of salaried employment as an engineer. While there are some useful guides and support available to self-employed consultants and contractors, this is an area where more attention could be targeted at ongoing professional development. In this context, communities of practice or other peer groups could be established through professional associations to share experiences between those who have already established themselves in self-employment and those who have recently transitioned or are contemplating the transition. Indeed, many of the self-employed engineers in this study indicated an interest in participating in the research because they wanted to use their experience to help others who might be interested in a new career pathway as mature engineers. Such groups might also facilitate collaborative work opportunities.

Professional engineering associations also have a role to play in opening up opportunities for professional development for mature practitioners in later career that are relevant to their level of experience. There is an inconsistency between the rhetoric about the dramatic impact that is anticipated when large numbers of engineers in the baby boomer cohort retire from the workforce and the limited interest from professional associations to encourage and support their most experienced practitioners to remain active in the professional workforce. Instead, the current focus is on how to attract young people into — and get established in — engineering and other STEM (science, technical, engineering, mathematics) professions.

As a first step, professional associations need to examine their own representations of mature engineers in later career to ensure they are not stereotyped and that their ongoing career development needs are not confined to pre-retirement planning seminars. Images selected for publications and websites need to be vibrant and challenge the dreary and conservative stereotypes that are often associated with older engineers. The submission by Professionals Australia (2015) to the Australian Human
Rights Commission National Inquiry into Employment Discrimination against Older Australians and Australians with Disability acknowledges that, as a group, mature professionals face barriers and discrimination in the workforce. The response to the survey that informed the submission also demonstrated the value of consulting older practitioners about their experiences.

There is also more scope in professional associations and universities for mentoring programs that connect mature engineering practitioners in later career (or after they have left the paid workforce) with those trying to enter the profession, in early career or in mid-career. Such relationships would benefit from professional development opportunities for intergenerational discourse to foster ongoing inclusion, engagement and mutual learning. Consultation with self-employed engineers about how they could contribute to mentoring would also be beneficial as many would be interested to become involved but might be constrained by lack of access to opportunities or the difficulty of allocating time to activities that do not generate income.

Recommendations for mentoring and professional development will be discussed again in Question 4.

**Question 3: What does it mean for mature practitioners if they not only doubt the future for their own practice but also believe that the future of the profession is being undermined?**

<table>
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<th>Tensions:</th>
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<tr>
<td>Mixed messages about the importance of engineering as profession for productivity and innovation in the national economy in an era of liquid modernity with its pressures of commodification and global competitiveness</td>
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<tr>
<td>Mixed messages about engineering and other technical skill shortages, exacerbated by retirement of baby boomers, and the turbulence of global and local markets that give rise to volatile shifts in demand for skills</td>
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<tr>
<td>Weakening of influence and authority of mature engineers in the workplace when their knowledge and experience are treated as a commodity by employers</td>
</tr>
<tr>
<td>Perceptions of the importance of their practice wisdom for future engineering practice are difficult for individuals to reconcile with the lack of structures for succession planning and knowledge retention</td>
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Although engineering as a profession is understood to be fundamental to the functioning of our communities, the economy and the environment, in this era of
liquid modernity and the modern organisation, engineers are not likely to be recognised and respected simply by virtue of their professional status and technical know-how. Instead, organisational literature, along with the accounts of many engineers in the study, points to the importance of engineers now becoming highly skilled at articulating, listening, collaborating and negotiating across a range of disciplines, professions and organisational departments. And the engineering perspective will need to extend beyond what Schön (1983) refers to as technical rationality to be open to the plurality and ambiguity of other perspectives if they are to be included in the critical and messy debates of current times. Being part of the conversation is not necessarily about convincing others to agree to the engineering viewpoint but about being open to alternative viewpoints and willing to collaboratively contribute to solutions.

A key recommendation here is that engineering as a profession needs to develop new discourses (Johnston, Lee & McGregor 1996) or a language that is capable of expressing the nuances of the social, environmental, political, economic and business contexts in which engineering practice takes place. This will be important in education and professional development at all career stages from undergraduate engineering students through to engineers in mature practice, as well as engineering leadership in the profession. A more nuanced language will also help engineers to think more reflectively about their practice and its impacts, to articulate their tacit knowledge and the complexities of practice and professional judgement, and to communicate with others about the value of the actual or potential contributions of engineering. In light of organisational theories that explain how the modern organisation does not privilege any particular profession in its discourse, engineers and other professionals must be able to make a contribution that is relevant to the organisation or face being left out of the discussion.

The previous question drew attention to the need to replace dreary conservative images of older engineers with more vibrant and modern depictions. In the same vein, and as discussed in Chapter One, the engineering profession also needs to counter the phenomenon of the invisible engineer (Petroski 1990; Trevelyan 2014a) and more
actively promote the people as well as the products, constructions and service systems of engineering. It is also significant that the profession is still struggling to transform its male-dominated culture to be inclusive of women, not only to encourage women to enter the profession but also to stay. Trevelyan (2014a, p. 535) offers an interesting speculation that women might be more likely to pursue an engineering career if the profession could better communicate its social and economic values and benefits.

A more comprehensive and nuanced language could help transform the narrowness of the culture to attract a more diverse workforce, which in turn could promote a more diverse and responsive language to communicate the value of engineering and build more collaborative relationships. The following words from Trevelyan (2014a, p. 536) point to the value of engineers developing high-level interpersonal and communication skills and a language for nuanced and reflective expression of complex and ambiguous ideas:

…”we could recognise how improving our listening, reading, seeing and critical thinking skills, and giving more respect to the equally valid ways in which others think and see the world, might also go some way towards regaining the respect we seek from others.\n
Professional development aimed at understanding change management and how to exercise agency and influence as an individual, not just as a leader of a team, would be relevant at this stage too.

A further recommendation concerns the experiences of those who are thriving in later career as mature practitioners in relation to the future of the profession. There is much to be learnt from engineers, whether in organisational roles or in self-employment, about what factors are enabling them to perform effectively and to feel relatively secure in their ongoing professional practice. For instance, those in self-employment may be able to contribute a perspective on how to leverage off the notion of knowledge as a commodity for trading their practice wisdom with client organisations, which may offer insights for engineers employed within organisations.
For many of the engineers in the study it might well be too late in their careers to gain and implement these skills if they have not already done so. Much of the professional development targeting skills required for effective practice in later career would need to be available to practitioners in their 40s and early 50s so that they can be more adequately developed for their own practice in mid-career, as well as for later life.

**Question 4: With the master-apprentice mode of knowledge transfer now outdated in most modern organisations, how could mature engineers cultivate elder roles and skills to pass on their practice wisdom to younger engineers and to their wider professional settings?**

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<th>Tensions:</th>
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<tbody>
<tr>
<td>Strong desire of mature practitioners to provide succession planning and other knowledge transfer is not necessarily supported by organisational practices and opportunities</td>
</tr>
<tr>
<td>Uncertainties about remaining time in workplaces to pass on knowledge</td>
</tr>
<tr>
<td>Potential of generational intelligence, intergenerational knowledge-sharing and “thinking together” is challenged by the need for effective communication skills and interest from mature and younger engineers, as well as support from employers</td>
</tr>
<tr>
<td>Knowledge transfer as a contribution or legacy represents rejection of the ‘burden’ discourse</td>
</tr>
<tr>
<td>Challenge to identify what knowledge and practice wisdom is important</td>
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In the context of knowledge and practice wisdom, this thesis has focused on the perspectives of individual practitioners as knowledge-holders instead of the more usual organisational or human resources perspectives of knowledge management and retention. The engineers in the study developed their practice wisdom from early years of hands-on practice and working alongside mature practitioners who imparted their knowledge. As noted earlier, these engineers come from an era of printed documentation of knowledge, some of which is still stored under their desks, in filing cabinets, and in boxes in their sheds and garages. But this is not the future or even the present method of retaining corporate knowledge in the modern organisation. The implications of lost knowledge are a deep concern to most of the engineers in this study and by others in the research and industry space (DeLong 2004; DeLong & Davenport 2003). Not all share such concern and in a technological era of deprofessionalisation and knowledge commodification, other avenues for access to
knowledge are required that are not reliant on traditional professional knowledge provision (Susskind & Susskind 2015).

As a result, it is important for mature practitioners to be able to identify and articulate the tacit knowledge that they hold and believe is critical to corporate memory, succession planning or the profession’s canon of knowledge. With clarity around what they hold and what they perceive as valuable, they are in a better position to open up avenues of consultation within their organisations and the profession to determine what knowledge is critical and how it can be imparted and retained. Conversations can be opened up between mature practitioners and younger engineers, line managers and organisational leadership about the value of their practice wisdom for the present and the future. As already recommended, professional development opportunities will be important to ensure mature practitioners have the necessary communication skills and also the capacity to enthuse others about the value of their knowledge. Where organisations continue to be reluctant to promote a knowledge-sharing culture and support ongoing professional development for employees, then professional associations can play an important role in providing structures and processes for mentoring and other avenues of professional knowledge retention. Again, communities of practice can also provide a valuable space for knowledge-sharing between professionals at varying levels of experience. These may already be in existence or can be created for specific purposes.

In the space of communities of practice, as in wider workplaces, many generations come together. As explained in Chapters Seven and Eight, recent literature draws attention to the importance of generational intelligence (Biggs & Lowenstein 2011) and knowledge reciprocity across generations in the workplace (Burmeister & Deller 2016; Higgs 2016b; Holian 2015; Rau & Adams 2013). The days of older engineers imparting their knowledge through a one-way process of identifying needs and instructing their younger counterparts is a relic of a bygone hierarchical era. All levels of practice need professional skills in work-based collaborative learning where everyone can participate in inquiry and knowledge-sharing processes. Pyrko, Dörfler and Eden (2016) capture this notion in the expression “thinking together”, which they
claim to be the driving force of an effective community of practice. They further explain:

In the light of the concept of thinking together, an assumption that knowledge can be literally transferred from one person to another can be considered as naïve; instead thinking together stresses that tacit knowledge is shared only in the sense that it is redeveloped as people discover each other’s performances in practice and they learn together and from each other, rather than being acquired or replicated (p. 18).

The message for professional development for engineers and other professional practitioners in current times is that new skills need to be learnt for developing practice wisdom: skills that involve intergenerational communication and an openness to listen seriously to what all generations and disciplines have to say. Also important is an appreciation that receptiveness to learning requires a meaningful context and opportunities to apply or repurpose the learning. In a similar vein, it is important for mature practitioners who are interested in mentoring, to gain skills and understanding about the complexities and potential of such relationships and to appreciate that the learning and benefits are two-way. Organisations and professional associations have a valuable role to play in supporting collaborative learning processes and the ongoing development of professional knowledge, but there are also actions that individual practitioners can initiate.

**Question 5: How can continuing professional development be reimagined and revitalised for mature engineers in the later part of their careers?**

<table>
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<th>Tensions:</th>
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<tr>
<td>Continuing professional mastery requires demonstration of energy, openness to change and innovative thinking to counteract stereotypical ageist judgements</td>
</tr>
<tr>
<td>Applying integrated and extended practice wisdom to emerging new complex problems might call for new ways of managing personal energy</td>
</tr>
<tr>
<td>Updating skills for further practice development and adaptation to changing technologies and regulations is problematic without workplace opportunities to apply the new skills</td>
</tr>
<tr>
<td>Professional development opportunities in later career may be limited by employers’ attitudes to investing in staff training</td>
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This study drew on the experiences of a group of engineering practitioners whom I understood as having a strong ongoing attachment to their profession. Most wished to
extend their careers well into the future if there were opportunities for interesting and challenging projects. They also wished to give back to the next generation, the profession and the community. But their practice wisdom is not always being harnessed for the future; and for those who nostalgically wish for engineering to return to the good old days, this is not likely to eventuate.

Professional associations have an important role to play in creating professional development opportunities that are responsive to the needs, interests and potential contributions of mature practitioners in later career. As suggested earlier, professional associations are not giving sufficient recognition to later career as an important phase in its own right when they perceive the only needs of older engineers to be retirement-related. When I went looking for information about professional development offerings for engineers, I came across one website that listed an array of business and leadership courses for CPD (Continuing Professional Development), each with a photographic image representing participants in the course. There was only one image of a person who could be considered to be in later career. That image depicted a grey-haired man wearing a mauve knitted V-neck vest speaking to a young man in a casual unbuttoned shirt – and the image was used to represent mentoring skills. The mentoring appeared to be one-way instruction from older to younger and the representation of the older engineer conveyed the impression of an older person as conservative and locked in the past.

Along with updating images to recognise and respect the diversity, relevance and ongoing contribution of mature practitioners in the profession, professional associations need to consult with a broad range of mature practitioners. This would enable them to better understand what is important to members of their profession in the later phases of career and to identify the content and format of professional development that would target the interests and needs of mature practitioners for continuing growth and application of their practice wisdom. The contributions of engineers to this study demonstrate that they are rich in ideas and appreciate the space to hold stimulating and purposeful conversations, instead of responding to an online survey. With thought-provoking input about potential new avenues for
professional development, consultation with mature practitioners is likely to yield imaginative approaches rather than more of the same. This would move ongoing professional development for engineers beyond attendance at events and courses that merely aim at updating practitioners’ knowledge of technological advances, keeping them abreast of changes to regulations and standards, and meeting requirements for retaining status as chartered or registered engineers. Revitalised professional development is likely to work with advanced competence, capacities to integrate a career’s worth of knowledge and skills, and stimulation to develop further conceptual thinking about bigger pictures and interconnections. Recommendations from the previous question identified communication skills and working with intergenerational dynamics as other areas of continuing professional development. Consultation could also explore how mature practitioners might be interested to contribute to professional education for their peers as well as for those in earlier career stages.

The age and experience of facilitators of professional development is also likely to be relevant in a reimagined approach to ongoing education of mature practitioners. Just as the younger ages of recruiters can present as a barrier for older workers to be appreciated for their experience and gain employment, so might mature practitioners perceive that young facilitators do not understand the value of their practice wisdom and how to leverage that for further development. Mature practitioners might well prefer to find themselves in a room with a facilitator closer to their age who understands the importance of their more integrated and complex understandings and their desires for generative opportunities.

The development of peer communities of practice opens up another avenue for reimagining professional development. This research provided the mature practitioners with a rare opportunity to reflect and discuss the changing meaning of their work, their hopes for the future and the challenges they face. Such conversational spaces could be created for groups of peers to examine their own practice, their generative roles and contributions, the challenges and dilemmas of mature practice, their future pathways and their thinking about the future of the profession. Indeed, professional associations could throw out the challenge to mature
practitioners – along with other career phases of practitioners – to create their vision for the future of the profession and how to better equip engineers for that future. This will require imagination because in this era of liquid modernity, engineering and its culture will likely have to transform to thrive. Interested mature practitioners could become involved in developmental opportunities to imagine what engineering needs to look like as a collaborative and inclusive profession, joining with other disciplines on an equal footing for framing problems, identifying complexities and devising solutions.

**Question 6: With these engineers’ dominant images of retirement as stagnant and unappealing, and phased employment, self-employment and volunteer work envisaged as a means to extend professional life, are there glimpses into how professionals with a strong attachment to their work might negotiate their way to a new phase of life?**

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<th>Tensions:</th>
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<td>Making choices between gradual or abrupt transitions from professional working life</td>
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<td>Being so attached to work that it is very difficult to contemplate life without work</td>
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<td>Personal choice of exit timing and strategy might be taken by others</td>
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<td>Strong desire and effort for personal control might, at the end of the day, be counter-productive</td>
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Letting go professional life presented as a significant challenge for the engineers in this study. Their survival in the profession indicates a capacity for reinventing themselves in their professional working life as engineers. Many had by choice or force of circumstance reinvented themselves in various working arrangements of self-employment, with varying degrees of success. Some in organisational employment had phased down their hours or were engaging in “blended work” (Damman 2016) in which they worked part of the week from home. For those in self-employment, working from a home office was the most common set-up. Some participants had taken up community interests as volunteers which provided another avenue to contribute their professional skills. These all provide ways of transitioning from full-time professional careers to a new life stage beyond paid work.

A reason for some of the engineers to participate in the study was to share their experiences to provide ideas about pathways that others might be interested to
follow. It would seem that an information space is required for those entering their later years of career to understand the range of options that could be available to them and the pros and cons of each. As suggested in earlier recommendations, self-employment is one pathway that could be more openly discussed in professional forums as there are both benefits and risks associated with it.

Access to information about phased and blended arrangements and entitlements would be useful and could be a service provided by professional associations. Opportunities to discuss with others who have personal experience of taking different pathways would also be useful, as would the experiences of those who have transitioned to full retirement. Hearing positive stories from those who are leading fulfilling lives after retiring from full-time work could help people contemplate a more optimistic future and suggest ideas for interests beyond the usual recreational notion of travel.

For those who wish to retain an attachment to engineering through volunteer work, professional associations could work more closely with the not-for-profit sector to provide access to information about roles as volunteers that would utilise their professional skills and knowledge. And engineers are well-positioned by virtue of their professional expertise in technical problem-solving, project management and business management to make valuable contributions to respond to a diverse range of social, environmental and community needs both locally and overseas. Professional associations could provide a forum for engineers to share information about their own volunteer work, whether or not it is directly related to engineering.

Professionals associations might also more directly target mature practitioners in later career and those who have fully retired to become mentors. This is a recommendation for professional associations that arose directly from the interviews. Some of the engineers in the study specifically mentioned that they would like to be involved in mentoring either while they are still working or when they have fully retired, but noted that structures and processes to facilitate this are lacking in the profession. Suggestions for formats for mentoring included face-to-face, telephone and Skype as
well as by email. Mechanisms to connect and support mentors and mentees as well as training for mentors would be required.

While there are advantages to developing what have been called “serious leisure” interests (Stebbins 2007) well before exiting the paid workforce as constructive planning for a fulfilling retirement, most in this study have not done so. If retirement is suddenly thrust upon them by ill health, family circumstances or retrenchment, then there will not be opportunity for a smooth transition of letting go. In this scenario of being suddenly confronted with a new life phase, they have their prior life experiences of survival and reinvention to call upon to re-establish themselves in a new way of life, but this time they may be in unfamiliar territory without the necessary knowledge for decision-making. In Eriksonian terms, they will be dealing anew with struggles for competence, identity, belonging, agency, generativity and integrity in a space that threatens stagnation and despair. This is where access to information about potential volunteer work and the retirement pathway experiences of their peers could be valuable for information and for support. It is also where women’s experiences of life transitions (Everingham, Warner-Smith & Byles 2007) and “composing a life” (Bateson 1989) could also provide clues to successful adjustment. And literature suggests that transitions for practitioners after unplanned retirements can still lead to satisfying lives so that the anticipation of stagnant retirement does not necessarily eventuate as reality (Ingram & Stine 2016).

**Suggested research directions**

This section proposes fruitful avenues of further research in directions that were opened up by the research design and conclusions of this study. Some of those suggestions reflect the particular features of the group of people who participated in the study. The 34 male engineers who ultimately participated presented as deeply attached to their professional work and confident of their competence. But I do not claim that this is a representative sample of the profession in Australia and another group of engineers might shed different light on late career experiences and have a more positive anticipation of life beyond paid work. As noted in Chapter Three, it is a
matter of speculation as to what the research might have brought forth with a different sample. Similar purposeful conversations could take place for thinking about mature practice at younger ages, such as 45 to 55 years, through to those in their 80s and those who are no longer attached to the profession. Studies could also target female engineers and other professions. A contribution in later career could span three or four decades, which certainly points to this dimension of working life being worthy of more exploration. And with subsequent cohorts coming through, experiences are likely to be different.

A significant characteristic of the sample is the absence of female engineers as a result of the serious underrepresentation of women in the profession, particularly at older ages. This is likely to be the case for the foreseeable future but perhaps in five years’ time it would be feasible to target older female engineering practitioners from across the world to explore what might be their issues in late career and how the findings and theoretical interpretations of the current study might connect with their experiences. The literature suggests ambiguity in the experiences of women as they shape their later working life. Some studies indicate they are more likely than men to create a balance of interests across work, family and community in later working life as they transition to retirement. A recent study of grandparents (Moore & Rosenthal 2017) suggests that men are more likely than women to express their sense of generativity through notions of legacy in a variety of forms. Other studies have found that professional women are similar to men in the centrality of work in their lives and a strong attachment to the sense of a professional self.

Another research perspective on female engineers would be to explore the practice trajectory of women in the profession. The focus has been on attracting women to study engineering and other science and technical vocations and to retain their participation in these careers. As a result, little attention has been given to the period of mid-career to late-career for practice development and retention issues. Female engineers’ expectations of the sources of fulfilment and frustration in later career could illuminate their career and development needs which need to be considered if they are to extend their working lives. Trevelyan’s (2014a) speculation that women
might be more interested in professions that can clearly articulate their social value could be usefully explored through a comparative study of female and male engineers.

In all of these ways, the experiences of professional women who have continued through to late career in a male-dominated profession would open up an underresearched avenue of late career for professional women in engineering and other practice professions. In view of the pattern of retirement occurring faster and at earlier ages for female engineers than for their male counterparts (Kaspura 2015), late career could be considered to commence at 50 years of age instead of 55 years as used in this study.

On a different note, self-employment for practitioners in later career is a particular working arrangement that has received little attention in the literature and deserves further investigation. With modern organisations increasingly turning to the flexibility of contingent workforces, self-employment will continue to become an increasingly common form of employment in engineering and in other professions. Different forms of self-employment, as well as business ownership, could be explored for their benefits and risks in later working life, along with professional development needs and appropriate modes of learning experiences.

This study concludes that self-employment holds ambiguity for conceptualisation of retirement and does not fit with the dominant thinking about bridge employment, which is typically considered as a job between exit from a long-term career in a large organisation and full retirement. To individual practitioners, the shift to self-employment or business ownership in the professional sphere could hold meanings such as a new phase of career, a reorganisation of work to a portfolio approach, a way of financial survival after job loss, or a transition to full retirement. In considering the meaning of retirement for those in self-employment, questions arise about decision-making and triggers for phasing down or full retirement and also how they would recognise the point of retirement from self-employment. Longitudinal studies of the transition experiences of practitioners from organisational employment to self-employment would contribute to a broader understanding of mature practice in
professions such as engineering where the early phases of career are typically salary-based.

Similarly, longitudinal studies of mature practitioners from later career through to the early years of full retirement would also provide valuable insight into the changing perceptions of professionals with a strong attachment to their work as they adjust to stepping off into life beyond work. The tension between holding on and letting go could be explored through the changing meanings of work, the desire and opportunities to continue using professional expertise, and the desire and opportunities for generative activities and legacy creation. This dynamic tension would also provide a useful lens for the meaning people give to retirement and whether this changes over time or whether retirement even holds relevance to individuals. Such knowledge would enhance theoretical understanding of transition processes for professionals from a work-centric focus to a different balance of life interests, including how practitioners continue their sense of a professional self by engaging in unpaid or volunteer interests. A practical application of further research into experiences of mature practitioners as they transition into retirement would be to enhance the relevance of retirement preparation programs to a greater diversity of people in this life phase.

Finally, the methodology of this thesis study could be extended beyond the engineering profession. The study has demonstrated that analysis of a single profession within the older workforce adds a valuable dimension to understanding the experiences of individuals who are working later in life or considering that prospect. The inductive research design, the six core conceptual questions – as well as the larger set of 16 conceptual questions – and the theoretical framework described in Chapter Eight offer a useful approach to studying other practice professions. And within the engineering profession itself, there is a multitude of disciplines, industries, sectors and working arrangements that could be explored.

Other possibilities for future research emerge from the conceptual work undertaken in the thesis. The attention of many of the original 16 conceptual questions and the
subsequent six core questions is on the experience of mature practice in later career. The phenomenon of mature practice is relatively unexplored in the literature and suggests a fruitful direction for further research. Higgs and Titchen’s (2001a) model of doing, knowing, being and becoming could provide a useful theoretical framework for further study of how mature practice differs from earlier phases of practice, of the roles of mature practitioners in professions and in organisations, of mature practice as a self-employed professional, and of ongoing professional development needs in the career years of mature practice.

The Eriksonian psychosocial framework also throws up potential directions for further research into mature practice development in later working life. The importance to the engineers in this study of both knowledge legacy and continuing contribution to benefit the wider community, point to the need for more research into generative motivations as a dimension of mature practice and ongoing development. The work of McAdams (1993) and Maclean et al. (2015), discussed in the previous chapter, would provide a useful framework for exploring Eriksonian concepts of agency, communality, influence and legacy in later career. In-depth conversations with both female and male mature practitioners in specific professions would add valuable perspective on practice development and role opportunities in organisations. Vaillant’s (2002) distinction between generativity roles that mentor the younger generation and those that preserve cultural meanings and traditions could also be used as a guide to deepen understanding about the nuances of generative roles beyond the usual focus on mentoring or knowledge transfer to younger practitioners. Using an Eriksonian framework, the notion of elders in workplaces could be usefully explored for professional engineers, as well as for other occupational groups.

Nostalgia and loss are other dimensions of the experience of mature practice that would benefit from further research from an Eriksonian perspective. As brought to light in this thesis, mature practice development requires engagement with many tensions relating to loss and change. One such avenue of research would be to further explore Erikson’s (1968) concept of retrospective mythologising, mentioned in Chapter Eight, as an expression of professional nostalgia for practitioners in later career. This
would build on studies by Gabriel (1993), Ylijoki (2005) and McDonald, Waring and Harrison (2006) of nostalgia in the workplace. It would also be useful to research the phenomenon of nostalgia from a perspective of intergenerational dynamics and its impact on communication and knowledge sharing or “thinking together”.

The challenges of sharing practice wisdom across generations, including how tacit knowledge might be made explicit and the roles of mature practitioners in communities of practice, could also be richly explored from the perspectives of doing, knowing, being and becoming. This is relatively unexplored territory in the field of mature practice. Communication across the generations involved in professional practice in workplaces could build on the work around “thinking together” (Pyrko, Dörfler & Eden 2016) and generational intelligence (Biggs, Haapala & Lowenstein 2011) and its application to reciprocal intergenerational learning experiences in communities of practice.

This thesis has focused on the perspectives and lived experience of individuals in later working life and did not seek out the perspectives of those who employ or develop public policy that affects them. But two of the 16 conceptual questions that emerged from my sense-making addressed the meso level perspective of organisations and human resources management. These two questions were not gathered up when I developed the six core questions that would guide the subsequent theoretical layers of interpretation in Chapters Seven and Eight and the recommendations of this chapter. In Chapter Seven I noted that I would revisit these questions as a fruitful source of future research directions. The two questions direct attention to the external world and how it influences the experience of mature practitioners in later career:

- Will there be a future for mature practitioners in modern organisations if knowledge is treated as a commodity? (Question 9)
- How is professional practice in later life impacted if organisations are seen to be targeting for retrenchment their most experienced employees (“veterans”) with critical knowledge? (Question 11)

Both questions connect with changes to the place of knowledge and the valuing of mature practitioners in modern organisations. There is an extensive body of literature
about knowledge creation and management, including the impact of technology, from an organisational perspective. On the one hand, systems to ensure the institutional retention of corporate memory are seen as vital (DeLong 2004). Globalisation of organisations and the labour market along with profound changes in technology, on the other hand, are considered to be transforming knowledge creation and the need for corporate knowledge retention (Susskind & Susskind 2015). Stereotyped conservative pictures of older engineers and the profession’s image of being ‘communication-challenged’ (Trevelyan 2014a), along with the stories from my study of older engineers storing boxes of old documents in their shed and garages, are unlikely to align with the future world of professionals in modern workplaces. Questions 9 and 11 point to the need for research into how leadership, managers and human resources personnel perceive the value of different forms of professional knowledge and practice wisdom and practitioners in later career – both employees and consultants – who are holders of knowledge at an advanced level of competence. This study suggests that the engineering profession would benefit from a greater understanding of these perspectives. Such research could also extend to other practice-based professions.

**My contribution**

To summarise, this thesis has explored the experiences of engineers working late in their careers of professional practice in the early twenty-first century. That exploration contributes a richer understanding of the intellectual and psychological issues that arise for these professionals in the dynamics and tensions of their current commitment to practice and in their considerations of extending their careers.

The specific contributions of the thesis include opportunities to learn from and build on the first-hand accounts of a group of male engineers, most of whom belong to the baby boomer generation. As members of a generation that is engaging with working life and retirement differently from earlier generations, the participants’ first-hand accounts of their experiences and understandings of longer lives and careers offer valuable insights into present-day life for mature-age professionals. Such first-hand
accounts are relatively uncommon in the literature on extending working life in the current era, and even more unusual in literature concerning older engineers. And this was a group who presented as keen to talk about their professional work, their careers and what matters to them as professional practitioners.

The identification of underlying dynamics and tensions that characterise mature engineering practice in the current era of deprofessionalisation represents another important contribution of the study. The engineers were not only concerned about their own professional practice in later career but also the wider context of their profession that has had to renegotiate its influence and visibility over the decades of their careers. The summary of the dynamics and tensions presented in Table 1 at the end of Chapter Seven is now split into the following six diagrams to offer a more visual and active representation of the interwoven dynamics and tensions that arose from the two readings of the conversations with the engineers and further interpretative work from the perspectives of the initial literature review.
Dynamics

- Being a holder of significant knowledge, both intellectual and practical, acquired over decades; acquiring authority from the hard lessons of history
- Using sophisticated knowledge to gain insight into a wide range of emerging, novel and complex issues
- Integrating theory and practical experience in ways that are tacit
- Exercising advanced competence: being an engineer’s engineer whose professional judgement allows them to contribute on their own terms
- Articulating concern for the public good

Tensions

- Self-perception as craft experts at odds with the perspective that sees them as corporate human capital: a commodity for sale on labour markets
- Professional judgement challenged by organisational and public stakeholders and by other professional perspectives
- Wanting to be in control and accept ultimate responsibility for their work and career while autonomy and agency is increasingly contested
- Working out how far to go in challenging expectations and mandates of others

Figure 3: Dynamics and tensions - What does it mean to be a mature engineering practitioner in later career? (Question 1)
Dynamics

- Maintaining attachment to work in whatever way possible to ensure continuing use of expertise and contribution to public good, including both paid and unpaid/volunteer opportunities
- Adapting work arrangements to allow exercise of autonomy, flexibility, respect for experience
- Shifting to self-employment to circumvent negative age-based discriminatory attitudes and practices
- Learning new skills in self-employment to build and maintain work flow
- Living with uncertainties about future opportunities and pathways, as well as health status
- Embracing attitude of continuing careers rather than notion of working in retirement

Tensions

- Will and intention to continue working is subject to others’ decision-making about provision of work, whether as employers or potential clients
- Negative age-based discriminatory attitudes and practices contradict the espoused value of mature professional experience
- Self-perception of critical value of knowledge and experience may not be matched by organisation’s evaluation of their importance, particularly if the knowledge is perceived as an easily acquired commodity
- Underlying unease when deep attachment to work is jeopardised by organisational and systemic influences on continuity of career
- Phasing down from full-time career through more flexible organisational working arrangements can be viewed as an unacceptable compromise of professional work quality, even if organisations offer options
- The desire to continue long professional careers is at odds with the dominant public discourse of older people being a burden.

Figure 4: Dynamics and tensions - How do mature engineers struggle with and deal with the desire for continuing influence and impact in late career? (Question 2)
Dynamics

- Dealing with loss of agency and lowering of expectations for their own ongoing career development
- Trying to make sense of the signs of de-engineering of the profession
- Sustaining professionalism and high standards of professional engineering practice in modern employment settings

Tensions

- Mixed messages about the importance of engineering as profession for productivity and innovation in the national economy in an era of liquid modernity with its pressures of commodification and global competitiveness
- Mixed messages about engineering and other technical skill shortages, exacerbated by retirement of baby boomers, and the turbulence of global and local markets that give rise to volatile shifts in demand for skills
- Weakening of influence and authority of mature engineers in the workplace when their knowledge and experience are treated as a commodity by employers
- Perceptions of the importance of their practice wisdom for future engineering practice are difficult for individuals to reconcile with the lack of structures for succession planning and knowledge retention

Figure 5: Dynamics and tensions - What does it mean for mature practitioners if they not only doubt the future for their own practice but also believe that the future of the profession is being undermined? (Question 3)
Dynamics

- Trying to work out relationships across generations to impart knowledge and tacit practice wisdom
- Needing to call on sets of skills for which professional development opportunities might not be available
- Being challenged to articulate tacit knowledge
- Pioneering new terrain of knowledge-sharing that was not part of their own professional tradition
- Using elder roles to retain influence, agency and impact

Tensions

- Strong desire of mature practitioners to provide succession planning and other knowledge transfer is not necessarily supported by organisational practices and opportunities
- Uncertainties about remaining time in workplaces to pass on knowledge
- Potential of generational intelligence, intergenerational knowledge-sharing and “thinking together” is challenged by the need for effective communication skills and interest from mature and younger engineers, as well as support from employers
- Knowledge transfer as a contribution or legacy represents rejection of the ‘burden’ discourse

Figure 6: Dynamics and tensions - How could mature engineers cultivate elder roles and skills to pass on their practice wisdom to younger engineers and to their wider professional settings? (Question 4)
Dynamics

- Demonstrating professional competence remains important
- Engaging in professional development continues to be accepted as a professional responsibility for up-to-date technical competence and knowledge and a requisite for continued practitioner registration/chartered status
- Having insight into the nature of their ongoing development needs is likely to be curtailed by the traditional focus on technical and regulatory topics
- Valuing their own skill sets might entail inflation of their current worth
- Developing further technical expertise in later career can be limited by a ‘ceiling’ of advanced specialist knowledge

Tensions

- Continuing professional mastery requires demonstration of energy, openness to change and innovative thinking to counteract stereotypical ageist judgements
- Applying integrated and extended practice wisdom to emerging new complex problems might call for new ways of managing personal energy
- Updating skills for further practice development and adaptation to changing technologies and regulations is problematic without workplace opportunities to apply the new skills
- Professional development opportunities in later career may be limited by employers’ attitudes to investing in staff training

Figure 7: Dynamics and tensions - How can continuing professional development be reimagined and revitalised for mature engineers in the later part of their careers? (Question 5)
Dynamics

- Rejecting ‘not working’ in favour of continuing attachment to professional work
- Negotiating timing and pathways between full-time work and full retirement is not clear-cut and presents opportunities for reinventing both work and retirement
- Leading active, stimulating and productive lives is important to these professionals, whether through paid or unpaid activities
- Blurring the boundaries between work and retirement and reinventing notions of late working life and retirement

Tensions

- Making choices between gradual or abrupt transitions from professional working life
- Being so attached to work that it is very difficult to contemplate life without work
- Personal choice of exit timing and strategy might be taken by others
- Strong desire and effort for personal control might, at the end of the day, be counter-productive

Figure 8: Dynamics and tensions - Are there glimpses into how professionals with a strong attachment to their work might negotiate their way to a new phase of life? (Question 6)
The inductive use of cross-disciplinary literatures helped to crystallise the nature of these issues and provided concepts and theories to enhance understanding and to explain them. These concepts and theories include psychosocial life course theories of individual development and concepts of modern organisation, communities of practice and practice development. In combination, these theories and concepts offer a another distinctive contribution as they open up rich possibilities for deeper understanding of mature practice and for creating continuing developmental opportunities for mature practitioners in later career. The theoretical lenses that this further inductive use of literature offered to the interpretive process of the study are represented in the next diagram.
Figure 9: The study’s inductive and interpretive model for theoretical and practical contributions to knowledge

- Concepts and theories from these cross-disciplinary literatures deepen understanding of the dynamics and tensions for engineering practitioners in later career in a climate of depersonalisation.
- Developmental transitions and tensions of mature adulthood are relevant to professional roles and development in later working life.
- Extending working life requires fresh approaches to continuing developmental opportunities for mature practitioners.
This study was based on the experiences and perceptions of later working life of an underexplored group of older or mature-age workers, specifically, male engineers who are veteran practitioners of their profession. The participants’ career experience as engineers ranged upwards from more than 30 years to nearly 60 years. They all indicated that they held a strong attachment to their professional work and, in the main, spoke of hoping to extend their careers through ongoing opportunities of interesting and challenging work with avenues to leave a legacy of their practice wisdom. In the conversational space of the in-depth interviews the engineers had the opportunity to initiate discussion of topics that they believed were relevant to their experience of later working life, as well as respond to the generative questions I had provided to them in advance of the interview. The outcome was a focus on a range of issues and tensions concerned with what it means to be a mature practitioner in the engineering profession in the current era, which in itself represents a contribution to practice and theoretical knowledge.

A significant contribution of this thesis is that the later phases of working life can be richly understood in the context of the whole of working life and even more broadly in the context of the whole of life, a perspective that has received scant attention in research. The male engineers who participated in this study had accumulated a career’s worth of experience that had generated an energy for them with many unresolved and continuing tensions about their future working life and their life beyond work. Deep attachment to the profession creates its own meanings and struggles as the end of the familiar pattern of working life may be drawing near, and professional and personal selves are enmeshed in developmental transitions and tensions of later adulthood.

A prominent issue for the engineers in this study related to their strong attachment to the engineering profession and their perceptions of the value of experience and practice wisdom that mature practitioners have developed over the course of their long careers. A difficult tension arose for the engineers when this experience did not appear to be valued by others in their working world. The tension was partly about
uncertainties for future employment and limited avenues to leave a legacy of their knowledge but also about strong concerns related to the deprofessionalising of engineering.

In the case of these male engineers, such tensions might also be compounded by the marginalisation or invisibility that can accompany the experience of ageism in our culture. And if they are struggling to give voice to their tacit wisdom, then this can add to their invisibility. Understandings of the lived experiences of individuals add richness to the depersonalised perspectives of organisational and systemic theorising.

Another conclusion offered by the thesis is that professional development does not end for professional practitioners when they reach a particular level of mature competence. Ongoing professional development remains important in later phases of mature practice. But what is needed is fresh thinking about this new territory instead of more of what is available to less experienced practitioners. Learning opportunities are required that respond to changed work contexts, roles and interests of those in mature practice. For instance, it is important for mature practitioners to develop a language that can help articulate their tacit knowledge so they can better convey the value of their mature experience, as well as create a legacy of their practice wisdom for others. And something that particularly resonated for me is the lack of a language – and practice - for most of the engineers in this study to reflect on their own needs, reactions and ways of dealing with their ongoing developmental challenges and tensions. Arguably many issues and tensions of mature practice are not directly acknowledged in their day to day conversation and were only hinted at even in their discussions with me. I would also speculate that alternative understandings of the complex world in which engineering is performed are also curtailed by limitations of the profession’s discourse or shared language.

As part of the inductive approach of the research, I searched for literatures that would shed light on the conceptual questions about mature practice, tacit knowledge and ongoing professional development – particularly in the context of modern workplaces – that emerged for me from my readings of the engineers’ conversations. I discovered
that the practice literature is underdeveloped in later career phases and there was little that addresses the work experiences of mature practitioners in the modern organisation. Nor does that literature acknowledge or explore the consequences for individuals, organisations and communities of discounting the tacit wisdom held by the elders. One of the most striking and poignant images offered to me by the engineers was the picture of them storing documents in their own garages and sheds, as well as under desks and in filing cabinets in their workplaces, while their employers – like most modern organisations – rely on digital and online systems. Given the speed and pervasiveness of contemporary change, it is open to speculation whether mature practitioners – in any profession – with a lifetime’s commitment and expertise will continue to engage through the extended years of later life, or whether they might simply regress and withdraw.

I did find some theories from the literature on the practice development of health professionals that together are capable of enhancing understanding of the practice space of mature professional careers. This connection between practice development and theory represents another major contribution of the research. As presented in the previous chapter, the practice development model of doing, knowing, being and becoming (Higgs & Titchen 2001a) not only offers richer language for describing and explaining the performance and tacit knowledge dimensions of mature practice development, but also opens windows into the more personal dimensions of “who I am” as a professional self and the continuing development of a professional self as an evolving becoming. The model can be applied to the whole professional practice career and offers insights into how tacit practice wisdom can be made explicit. In conjunction with an Eriksonian model for a whole of life perspective on individual development, there is much more that individuals and professions themselves can learn about the issues of later phases of mature practice.

My methodological approach also makes a contribution to how understanding of mature practice development can be further explored. The study has demonstrated that there is much to be learnt from individual veteran practitioners themselves and consultation with them must be part of the way forward in both research and the
practice development sphere. The engineers who contacted me to participate in the study were keen to talk about issues that mattered to them and which they might not have had the opportunity to air before: in the words of one engineer, “I’ve been doing this job a while and nobody’s asked me what I think of it”. One of the most reflective participants in the study explained his participation in the research in this way:

I think deeply about these sorts of things all the time. That’s why when I saw your advertisement for feedback I thought ‘oh this is great. I want to tell somebody, you know, have it written down’ and if you can use it in your research that’s just fabulous. (#26Org)

It will be important to open up conversational spaces and listen to what mature practitioners have to say about the development of mature practice. At the same time, it will be important to support them to develop a language to crystallise their tacit practice wisdom and to engage in a variety of communities of practice for opening up intergenerational conversations and more reflective conversations with their peers.

A concluding reflection

At the outset of my thesis work, my interest was in whether - and how - people working in the later years of their career engage with key issues being discussed in contemporary public policy debates and academic literature. Included in these issues were the possible economic and social impacts of ageing workforces and populations, the implications of being retired for much longer periods of time than previous generations, how working life might be productively extended, and how organisations will actually go about retaining or exiting older workers from the workplace. I was especially interested in how these issues are made sense of by people in technical professions such as engineering as these professions have historically been vital to Australia’s infrastructure and productivity. Furthermore, large numbers of engineers in the baby boomer generation are predicted to retire from the labour force over coming years.

I was keen to explore how the experiences and perceptions of mature technical professionals might be reflecting these highly contemporary and emerging issues. So I sought to find out how they were thinking about work at this stage of their careers and
how they were thinking about their future when work will no longer be central to their lives.

And I was richly rewarded by the energetic ways in which the participating engineers entered the conversational spaces opened up by the study. In all but one or two cases, I think any observer would say the engineers were generous with their time and keen to be heard.

Along the way, I learned that as researchers, we can learn more about ourselves than we anticipate. In the later phases of writing, I was drawn to Morgan’s (1983, p. 405) observation that “In research, as in conversation, we meet ourselves”. From the early interviews I was certainly aware that my age aligned with the target range of the research. I believe that being older myself heightened my understanding of their narratives and helped build rapport with the engineers. However, I also initially perceived myself as different from the people I interviewed: I am not a professional engineer, I am female and my professional career has been more of a patchwork than a pathway. At various times during the interviews the words of the engineers triggered in me a sense of shared experience, but it was later in the interpretive process, when my sense-making moved into understandings of mature practice and transition, that I met myself. On the one hand, I too wish to continue working as long as I can on interesting and challenging projects and the gaining of experience and wisdom has changed my way of thinking over the course of my career. And I too have railed against the changes I have been forced to face as the nature of professional practice has transformed. On the other hand, the physical changes, the desire for flexibility to pursue other interests and increasing numbers of my peer group entering retirement herald the imminence of a reshaping future.

As a result, I return to Erikson’s conceptualisation of hope as the most basic of our developmental challenges: one that remains crucial to our experiences of later working life and of transitioning to future life phases. The energy that is provided by hope was captured for me by the engineer who told me:

And I kept on working because I thought I had a future. (#25Org)
If people are to extend their working lives for fulfilment, it will be important to create environments that sustain energy and hope. At the same time, uncertainty is an inherent part of life and balancing deep attachment with open-minded curiosity is both the tension and ongoing reward of later stages of personal and professional development. In the words of another engineer:

If you know exactly what’s going to happen to you between now and the day you die, what use is that? Life is a journey and the adventure of uncertainty, not knowing what is around the next corner, the only way to find out is to go there by continuing your journey ... One never knows what is around that next corner in life until we actually go there. (#33SE)
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LIST OF APPENDICES

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APPENDIX 1: Recruitment publicity

March 2014

Research Project:

*Professionals working in later life: personal experiences and changing contexts*

Conducted by
Alison Herron, PhD student at Swinburne University of Technology, Faculty of Business & Enterprise

Purpose
To explore the experience of late working life from the perspective of engineering professionals.

Why?
We are hearing more and more about the economic imperative to work longer, but nothing of the voices of people themselves. What is the reality of late working life in the current era for individuals?

To date, knowledge is limited about how professional engineers in Australia are experiencing late career in terms of the diversity of their working arrangements, the constraints they face and the opportunities available to them.

Whose voices?
- Engineering professionals, who are 55 - 70 years old, AND
- currently or recently in the paid workforce whether:
  - continuing full-time or part-time in long-term career, OR
  - shifted to other employment structures, eg. self-employment, consultancy, contract- or project-based, part-time, part-year, casual, OR
  - shifted to other careers.
What does the project involve?
Alison will be conducting one-off interviews with people who are willing to contribute their perspectives and understanding of their experience of working in late career. Data will be de-identified.
The findings will become part of her PhD thesis, presented at conferences and published in academic and industry journals. A report summarising the findings will be provided to Professionals Australia.

The role of Professionals Australia
With a large percentage of members in this target age group, Professionals Australia is strongly supportive of the research project so they can better respond to people’s changing needs through late career. Professionals Australia is supporting the project by assisting with publicity to recruit participants from their membership (but will not have access to any personal or identifying information about participants).

To participate or find out more
Alison would welcome contact with you: aherron@swin.edu.au to discuss the project in more detail.
If you know of anyone else who could be interested, please ask them to email Alison.
APPENDIX 2: Project information statement

PROJECT INFORMATION STATEMENT

<Date 2014>                                                                                       Faculty of Business and Enterprise

Dear <>

Project Title:
Professionals working in later life: personal experiences and changing contexts

Thank you for your expression of interest in this project. This letter will provide you with more information to help you decide whether you would like to be interviewed to contribute your knowledge to the research.

About this project

The purpose of the research is to explore the experience of late working life in the current economic and social environment from the perspective of professionals who are in the paid workforce or have recently left the workforce. The study will focus on professionals in the age range of 55 to 70 years who have career backgrounds in engineering. Engineering as a profession is regarded as being critical to a productive economy and the skills are predicted to be in short supply with the structural ageing of the Australian workforce.

To date, knowledge is limited about how professional engineers in Australia are experiencing late career in terms of the diversity of their working arrangements, the constraints they face and the opportunities available to them. Your views and experiences would contribute valuable knowledge about employment patterns and the interaction of influences on professionals’ continuing engagement in the paid workforce or exit to other interests. You are likely to find it an interesting opportunity to reflect and talk about your working life and considerations for the future.

We would like to interview professional engineers from a variety of employment arrangements. These might include continuing full-time or part-time on their main organisational career path, or a shift to other careers or employment structures, such as self-employment, consultancy, contract- or project-based, part-time, part-year, or casual. Some people may have returned to the paid workforce after a period of not working.

The interviews and the data

The information for the project will be collected via personal interview, which will last approximately one hour and will be audio recorded. Notes will also be taken by the interviewer. Transcripts will be made of the recording and transcripts will be de-identified. All audio files will be stored confidentially on a CD-ROM in a locked facility at the Faculty of Business and Enterprise, Swinburne University of Technology, to which only the named researchers will have access. Following completion of the study data will be held for a minimum of five years before it will be destroyed. You may withdraw your participation, data or material contributed at any time.
The researchers

Alison Herron (PhD student), Prof Nita Cherry (Principal Investigator), Assoc Prof Elizabeth Brooke and Assoc Prof Patricia Buckley (Associate Investigators):
Faculty of Business and Enterprise, Swinburne University of Technology

The research is being conducted by Ms Alison Herron to wholly fulfil the requirements of a PhD qualification. Professionals Australia (formerly APESMA) is supporting the project by assisting with publicity to recruit participants from their membership but will not have access to any personal or identifying information about the participants. At the conclusion of the study, Professionals Australia will be provided with a report summarising the findings, with all participants de-identified. A summary of the findings will also be provided to participants.

The outputs, confidentiality and your consent

The information provided by you during the course of the interview may be used in the outputs of this research, including a PhD thesis, publications, conference presentations and reports to government, industry and professional associations. Individuals to whom you make reference will not be named and their confidentiality maintained at all times. All personal information, during and after the study, will be handled in accordance with the Swinburne University Policy on the Conduct of Research. At the interview the interviewer will ask you to sign an Informed Consent form. Your informed consent will indicate that:

- all questions about the research have been answered to your satisfaction
- your participation in the research is voluntary
- you may withdraw from the research at any time
- you agree to the interview being audio recorded and transcribed

Signed informed consent forms will be stored in a locked facility, located separately from interview transcripts and data.

If you wish to participate and for further information about the project, please contact:

Alison Herron OR Professor Nita Cherry
aherron@swin.edu.au ncherry@swin.edu.au
Tel: 03 9214 5901

If you agree to be interviewed, we will contact you to make arrangements for a convenient time and location. Prior to the interview we will send you an outline of the interview questions so you have the opportunity to consider the topics to be explored.

Thank you for your interest
Yours sincerely

Professor Nita Cherry Alison Herron
Principal Investigator Student Researcher/PhD Candidate

Concerns or complaints

This project has been approved by or on behalf of Swinburne’s Human Research Ethics Committee (SUHREC) in line with the National Statement on Ethical Conduct in Human Research. If you have any concerns or complaints about the conduct of this project, you can contact:

Research Ethics Officer, Swinburne Research (H68), Swinburne University of Technology, P O Box 218, HAWTHORN VIC 3122
Tel (03) 9214 5218 or +61 3 9214 5218 or resethics@swin.edu.au
APPENDIX 3: Informed consent form

INFORMED CONSENT FORM

Faculty of Business & Enterprise
Swinburne University of Technology

Project Title:
Professionals working in later life: personal experiences and changing contexts

1. I consent to participate in the project named above. I have been provided with a copy of the project information statement to which this consent form relates and any questions I have asked have been answered to my satisfaction.

2. In relation to this project, please circle your response to the following:

- I agree to be interviewed by the researcher  Yes  No
- I agree to allow the interview to be recorded by electronic device  Yes  No
- I agree to make myself available for further information if required  Yes  No

3. I acknowledge that:
   (a) my participation is voluntary and that I am free to withdraw from the project at any time without explanation;
   (b) the Swinburne research project is for the purpose of research and not for profit;
   (c) any identifiable information about me which is gathered in the course of and as the result of my participating in this project will be (i) collected and retained for the purpose of this project and (ii) accessed and analysed by the researcher(s) for the purpose of conducting this project;
   (d) my anonymity is preserved and I will not be identified in publications or otherwise without my express written consent.

By signing this document I agree to participate in this project.

Name of Participant: …………………………………………………………………………………

Signature & Date: …………………………………………………………………………………

Please keep a copy of this Informed Consent Form for your records.
APPENDIX 4: Interview guide provided to participants

INTERVIEW GUIDE

These questions provide a rough guide to the topics we are likely to discuss in the interview.

1. What are your current employment arrangements?
   a. Eg: Employed, self-employed, business owner ....
   b. Time structures: Eg full-time, part-time, project-based....
   c. Field of work, position and roles

2. How have these work arrangements changed (if at all) in recent years?
   a. How did these changes come about?

3. What suits you about your current employment arrangements?
   a. What (if anything) would make your working life better for you?

4. How typical do you think your situation is for people at your stage of career in your profession?

5. What does work mean to you in your life now?

6. What is your best guess at how your involvement with work will pan out from now on?

7. What would you advise professionals in your field who are in late career and contemplating leaving their full-time employment for different working arrangements?
APPENDIX 5: Manual coding of passing on knowledge theme

<table>
<thead>
<tr>
<th>Quotes</th>
<th>Related concepts &amp; descriptions</th>
<th>Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is a real generation gap in the place now, due to previous years of downsizing and redundancies and all of that. So there’s a few old people like me but generally a big gap then in age. (#30Org)</td>
<td>▪ There is a sense of urgency to ensure continuity of engineering knowledge in the field, particularly as there is perceived to be a missing generation or scarcity of engineers with mid-career level of expertise who could be the conduit between the exiting senior engineers and the incoming junior engineers.</td>
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<tr>
<td>When I was young in the place many senior engineers took the trouble to coach and teach me, and I’ve always been very grateful for that. And that’s why I try and do that myself for the younger people now – that’s a loyalty type thing. (#30Org)</td>
<td>▪ The mentoring they received (or wished they had received) early in their careers from senior engineers ▪ Mentoring connects with a core value of helping others wherever you can</td>
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<tr>
<td>I reckon there’s a fair bit of knowledge and understanding that I’ve got, and I didn’t just want to walk away and leave that. To me that’s sacrilege. I think it’s a complete waste of people’s knowledge and understanding to not tap into that and try and learn from it. (#27SE) It is important that experienced engineers with knowledge from working at the coalface have major input into the policy level of the value chain. (#5SE) ... my desire to pass on wisdom, my desire to mentor, my desire to make a contribution and to make a difference. Because I do feel I have not had the opportunities as much as I would have liked in my professional life to make a difference and to contribute. I’ve had a lot of contribute. (#21Org)</td>
<td>▪ Pass on the benefit of what’s in my brain ▪ Preserve the knowledge and expertise ▪ Address lack of a successor to vacated role or abolished position. ▪ Support younger engineers to continue working in their profession ▪ “Pass the torch” to the next generation ▪ Leave a legacy to individual younger engineers and to organisations ▪ Inspire others with a thirst for knowledge</td>
<td>What motivates them to pass on knowledge</td>
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<tr>
<td>We should be involved in giving more feedback, on improving what we do from day to day because we’ve made all the mistakes, gone down blind tracks and been the subject of crappy processes. (#3Org)</td>
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<td>-------------------------------------------------------------</td>
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<tr>
<td><strong>Professional responsibility</strong></td>
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<tr>
<td>I just believe that as professionals we have a responsibility to pass on our knowledge to the younger generation, to the profession in general, the canon of knowledge. (#25Org)</td>
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<tr>
<td><strong>Their own benefit</strong></td>
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<tr>
<td>o adds interest and contributes to intrinsic enjoyment of work and satisfaction</td>
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<tr>
<td>o enable them to ease back on their hours or exit the organisation</td>
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<tr>
<td>It’s satisfying from the professional viewpoint but it’s also satisfying from a personal viewpoint because I’ve been able to get half a dozen guys and advance their knowledge. (#2SE)</td>
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<tr>
<td><strong>Knowledge in practice:</strong></td>
<td></td>
<td></td>
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<tr>
<td>“on-the-job”, “hands-on practice”, “get your hands dirty”</td>
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<tr>
<td><strong>Knowledge as “the feel”</strong></td>
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<tr>
<td><strong>Complex examples of how outcomes were achieved in practice</strong></td>
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<tr>
<td><strong>The reasons for processes and decision-making, the why and how rather than what to do</strong></td>
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<tr>
<td><strong>The interrelated nature of technical decisions and the wider system.</strong></td>
<td></td>
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<tr>
<td><strong>The grey areas for decision-making.</strong></td>
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<tr>
<td>So much of this sort of thing isn’t written down. You can only learn it by actual experience and by doing it. (#2SE)</td>
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<tr>
<td>You’ve got to consider more than just a technical bit because it impacts on other people. (#11Org)</td>
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<tr>
<td>There is no perfect answer – everything is a compromise. I mean there are some things that are black and white and knowing when to recognise the black and white ones and when you can compromise is I guess a skill that you’ve got to learn. And you can’t even learn it by doing. It’s another skill you need to learn that complements your technical knowledge. (#15Org)</td>
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<tr>
<td><strong>Technical knowledge or advice as specialists in their field</strong></td>
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<tr>
<td>oh really just to be helping significantly and spending time with graduates to be working through the technical side of things as well as the other side of things to develop the younger people is something that I’m interested in and prepared to put time</td>
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</table>
to, where others might not be like that. (#22Org)

Oh I would probably have to say that it’s only technical knowledge... Even my daughters are not interested in me giving them any information about lifestyle skills - they know it all! (#25Org)

That’s the sort of mentoring and experience we can pass on, so we learn from hard lessons in the past, this is how we’ve got a go about things. (#26Org)

What knowledge they wish to pass on (continued)

| Critical safety knowledge and learning from past mistakes |
| The relevance of “history’s hard lessons” to regulations and standards being in place. |
| The importance of following the correct procedures, to avoid tragic accidents and loss of life – your own, fellow workers and the general public |

It’s all about marketable skills, portable skills - that’s the key to survival these days. (#26Org)

| Personal and career development |
| o helping young engineers be proactive about their careers, expand their horizons, develop the whole self. |
| o leadership, decision-making, managing self and others |
| o communication skills |

When Dr Spock knows that he’s leaving, he gives Dr McCoy the special Vulcan mind meld and transplants all his knowledge. (#7Org)

| Perform a Star Trek Vulcan hand mind meld to download the knowledge into the next generation’s heads! |

We can’t do the Vulcan mind meld. So we’re doing the next best thing. We’re writing it down and telling the stories. (#7Org)

| Tell the stories, record in procedures manuals, preserve older documents |
| Publications and presentations to industry |

Another motivation in the last 10 years or so has been - and I think it’s an appropriate role for anybody in late career but I am particularly motivated towards it - in various ways to pass on knowledge by education, coaching, mentoring etc. And my seminars have been well received by lots of younger people in the place. And there

How this knowledge could be passed on

<p>| Mentoring roles |
| Coaching and training |
| Teaching and seminars/workshops within organisations and to profession |
| Opportunities for younger engineers to work alongside senior engineers |</p>
<table>
<thead>
<tr>
<th>People seeking out what’s your opinion on things, advisory role, reality check, thinker-in-residence type of thing. (#26Org)</th>
<th>Providing guidance through a “sounding board” or “thinker-in-residence” role</th>
<th>How this knowledge could be passed on (continued)</th>
</tr>
</thead>
<tbody>
<tr>
<td>If Engineers Australia or Professionals Australia could set something like that up I’m sure it would be tremendously valuable. Probably those other few senior engineers or ones over 70 would probably be like me and wouldn’t want full remuneration for it even – as long as our expenses were covered we’d probably do it. (#23SE)</td>
<td>Professional bodies to take on a more active role to structure programs for older engineers with time available to mentor younger engineers</td>
<td></td>
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<tr>
<td>I reckon there’s a really strong future potential in terms of engineers actually going out into schools and actually spelling what engineers do, engineers and scientists. (#9SE)</td>
<td>Engineers to be involved in encouraging more school students to study science subjects and to enter engineering as a profession</td>
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<tr>
<td>Part of the shortcomings of our current system - the great training facilities of the dockyards, the state railways, the electricity commissions, which were all either State or Federal government places, were great training incubators for young engineers as well as tradesmen – they’re pretty much all gone. They’ve all been outsourced. They’ve all got to turn a profit, so the training and development of the younger guys is minimal. (#15Org)</td>
<td>Demise of the practical training grounds for young engineers – the rail yards, the dockyards, State government utilities, public service, manufacturing</td>
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</table>

is a recognised need for it. (#30Org)

I’d like to be working with more younger guys. At the moment because I’m senior they’ve given me a more responsible job. Fine, I don’t mind the challenge. But I would like to be working with some younger guys because I’m not going to be around forever. (#30Org)
There doesn’t seem to be any sort of structure to formal mentoring, handing on. Employers don’t seem to want to pay for any of that. There still seems to be a view in the world that you can just go and hire expertise. If you can’t get it in Australia you just bring it from overseas. One of these days it won’t be there I think. (#29SE)

Oh, a waste that it’s been frustrating for a while and getting more frustrating that I’m not able to give to the communities the benefit of what’s in my brain and my knowledge and experience. (#23SE)

The company decided years ago to sublet the expertise out to the suppliers and now they’re saying that’s not the smarter way to go, we need to have some internal knowledge – but you don’t just get it like that. (#3Org)

(IRR:) So what’s going to happen when you leave? A good question. I think I’ll leave an empty desk. (#25Org)

They may be made redundant at the very time they should be passing on ‘The Knowledge’ and they won’t pass it on because they’re all disgruntled, and there is no time to do it. (#7Org)

I just don’t have anyone reporting to me and I don’t feel like I feel encouraged to do that sharing. So if someone asks me I will give them, but I won’t volunteer and say ‘look how about you do this’. (#11Org)

I feel a strong loyalty to the organisation, not because of the way it’s behaving at the moment but more because of what it’s there to do. But I’ve also got to say loyalty ought to be a two-way thing and of

<table>
<thead>
<tr>
<th>Constraints to passing on knowledge (continued)</th>
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<tbody>
<tr>
<td><strong>Short-sighted attitude of employers:</strong></td>
</tr>
<tr>
<td>o Unwilling to fund training “because it costs too much”</td>
</tr>
<tr>
<td>o Unwilling to pay contractors or consultants already engaged on projects to provide mentoring to their younger engineers</td>
</tr>
<tr>
<td>o Not providing opportunities for formal mentoring to take place and not looking ahead to nurture and retain their younger engineers in the longer term</td>
</tr>
<tr>
<td>o Hire expertise instead of developing it internally</td>
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<tr>
<td>o Lack of succession planning, combined with ageing of engineering workforce in government organisations, means that corporate knowledge is being lost - knowledge base not passed on when individuals retire</td>
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<tr>
<td>o Cost-cutting on documentation of knowledge eg designs and processes</td>
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<thead>
<tr>
<th>Diminished commitment to the organisation due to:</th>
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<tbody>
<tr>
<td>o Loyalty no longer a workplace value held by employers or employees</td>
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<tr>
<td>o Devaluing of older professionals</td>
</tr>
<tr>
<td>o Redundancies</td>
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<tr>
<td>o Younger engineers not seeing a future for themselves with their employer</td>
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</table>
late the organisation has displayed absolutely no loyalty to its staff in any way – it’s set out to screw the staff in whatever way they could dream up. And I find that a sad thing because it says to the younger people ‘don’t bother making an effort and doing a good job because in the end it won’t be appreciated’. (#30Org)

While you’re running a business the amount of time you can make available for mentoring, particularly if you’re not going to get paid for it, is fairly limited. (#29SE)

It’s not the sort of thing you can read in a book and you can’t Google it. It’s in people’s minds or in old documents. It’s not new technology – it’s 40 or 50-year-old technology, so it’s not as though it’s developed a lot with the introduction of all the new computer aided stuff. It’s just the inherent knowledge, that’s necessary to know how they work and what goes wrong with them and how to fix them up. It’s not written down very much. (#13Org talking about his work in maintaining critical infrastructure machinery that is still in use)

Constraints to passing on knowledge (continued)

- Inaccessible knowledge:
  - Not recorded
  - Cumbersome electronic filing systems where you need to have the knowledge already of what is stored there to be able to search for the information
  - No repository for important archival documents. Following disaggregation of utilities important historical documents are archived in warehouses, but no indexing – or stored in people’s sheds and garages
  - Important old files have been destroyed (and continue to be) because people do not understand their significance

- Attitude of younger engineers:
  - Requires an openness to learning
  - Belief that all relevant knowledge is available on the Internet
  - Difficult for younger engineers to appreciate the value of critical safety knowledge if they have not been through the actual experience of something going drastically wrong as a result of oversights or shortcuts

- Insufficient time available: Jobs have become more stressful and people’s time more pressured since these engineers entered their careers

When I was young to acquire knowledge you actually had to be with other people. Whereas now if you want a bit of knowledge you can just Google it. But the young ones are tied to that technology. They’re looking in silos. (#29SE)

We have major accidents, we have fatalities. And they’re the sort of things that are very hard to explain with ‘you just do it that way and you’ll be okay’. It doesn’t really have any significance to them until
they actually experience it. (#13Org)

<table>
<thead>
<tr>
<th>Constraints to passing on knowledge (continued)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I’ve been doing it for 15 years now and I’ve got mainly the same clients. And they’ve had turnovers in staff and I hold the corporate knowledge. (#28SE)</td>
</tr>
<tr>
<td>▪ Staff turnover – continually losing corporate knowledge</td>
</tr>
<tr>
<td>▪ Job mobility – pass on knowledge and then people move to other jobs</td>
</tr>
<tr>
<td>I’m holding the skills right now and if I join up with somebody else, as long as I’m still holding about 60 per cent I’ve got security. When it drops to 40 per cent, I haven’t. (#24Org)</td>
</tr>
<tr>
<td>▪ Risk that could become dispensable if pass on all your know-how.</td>
</tr>
<tr>
<td>A lot of the risk assessments are now done by people who don’t know too much about the job, it’s just a paper exercise. And they really miss a lot of things. People then rely on those risk assessments but they’re done by people who don’t really understand the job... I’ve had the experience. I know what’s going to go wrong, what can go wrong, maybe seen it go wrong, know of other people who have had it go wrong. (#13Org)</td>
</tr>
<tr>
<td>Public safety and workers’ safety jeopardised</td>
</tr>
<tr>
<td>They work very hard reinventing the wheel. They look like they’re doing things – and they are doing things because the Council’s got no memory of it. (#28SE)</td>
</tr>
<tr>
<td>Waste and inefficiency from reinventing what is already known</td>
</tr>
<tr>
<td>I would be disappointed if I left this organisation and nobody ever approached me before I left or after I left for advice. You know, that would be a big disappointment... I wasn’t considered as somebody that added value or</td>
</tr>
<tr>
<td>Their lifetime’s knowledge has no value to the organisation</td>
</tr>
</tbody>
</table>

What concerns them if the knowledge is not passed on

Leaving a vacuum: uncertainty as to how the work will be carried out if no-one else has the skills – particularly in respect to old machinery that could endanger lives and cause extensive damage if not maintained correctly.
| had anything that was worth knowing. (#25Org) | There’s been a lot of shedding of manpower, particularly at the oldest corporate memory level... When you lose people who have got 20 and 30 years’ experience, you’re losing all that corporate memory. Yes they’re still bringing young people in but you can’t replace the 20 or 30 year veteran with somebody who’s recently graduated from uni. (#25Org) | Loss of corporate memory through major organisational restructures and shedding of the most experienced professional employees | What concerns them if the knowledge is not passed on (continued) |
APPENDIX 6: Snapshots of NVivo coding - passing on knowledge

Nodes

- Name
  - Passing on knowledge
    - Nature of knowledge
    - Motivation - pass knowledge
    - Lost knowledge
    - How to pass on knowledge
    - Constraints - passing on knowledge

Samples of coding from two transcripts

Reference 1 - 0.90% Coverage

one of the things that I do enjoy I guess is mentoring the younger engineers. So if the firm that I was in didn't encourage that then that would be one of the reasons that work would be less interesting I guess.... Yeah

Reference 2 - 4.56% Coverage

... really just to be helping significantly and spending time with graduates to be working through the technical side of things as well as the other side of things to develop the younger people is something that I'm interested in and prepared to put time to, where others might not be like that. During my working life, although less just recently, I've been involved with the professional Associations and organising professional development opportunities and speakers and those sorts of things... doing things outside of work as well to be encouraging social activities as well as the technical activities for people in regional areas compared to people in the capital cities who have more opportunities presented to them... but having worked in a capital city for a while those things, well I haven't taken on board those same sort of opportunities and other things in my home life or things that I've wanted to do or needed to do have taken precedence more recently. So they're just different circumstances at the time, I mean you can do some things or you can't do something at a particular time.

Reference 3 - 0.23% Coverage

... and seeing the results of what you put your work into.

Reference 4 - 0.42% Coverage

... you think it's worthwhile but you don't really know -- sometimes you don't get much feedback about it
Reference 1: 0.15% Coverage

Carry on, carry on learning, passing on knowledge, fixing problems ...

Reference 2: 0.80% Coverage

I'm at a stage in my career, I've done most of the things I want to do, what I'm looking at now is work that I can enjoy myself doing, that challenges me and hopefully where I can pass on knowledge. Now I'm not looking to climb up to be the next um branch manager of such and such an engineering company or whatever, if that's what I finish up doing, that's what I finish up doing ...

Reference 3: 0.55% Coverage

the things I've kept on going with is looking for something that keeps me interested, looking for something that challenges what I'm doing, and looking for something that I can ... I hope I can make a positive difference in passing on that accumulated knowledge.

Reference 4: 0.48% Coverage

IR: yeah, satisfying

IC: it's satisfying exactly. It's satisfying from the professional viewpoint but it's also satisfying from a personal viewpoint because I've been able to get half a dozen guys and advance their knowledge ...

Reference 5: 0.31% Coverage

And that's all I think we can do, as I see it, is make sure that somewhere along the line that knowledge gets passed on, in one form or another ...

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APPENDIX 7: Application for ethics approval of a research protocol

HUMAN RESEARCH ETHICS COMMITTEE

APPLICATION FOR ETHICS APPROVAL of a RESEARCH PROTOCOL

SECTION A: GENERAL INFORMATION

[Note: This application form should not be used for research involving clinical trials or ionising radiation. See below.*]

PROJECT FULL TITLE
Professionals working in later life: personal experiences and changing contexts

SHORT TITLE (Applicable)

APPLICANT DETAILS

RESPONSIBLE SWINBURNE FIRST INVESTIGATOR / SUPERVISOR
(Where project is part of student research degrees, dissertation, Senior Swinburne Supervisor must still be listed as the first investigator)

Name & Title/Position: Professor Nita Cherry, Professor of Leadership
Tel No(s): 9214-5001
Email: ncherry@swinburne.edu.au
Fax

Faculty / School / Centre / Institute: Faculty of Business and Enterprise
Swinburne Status: [ ] Swinburne Staff Member [ ] Adjunct Staff Member
Address for correspondence: Swinburne University, Faculty of Business and Enterprise, PO Box 218, HAWTHORN 3122 Australia

Main Student Investigator(s): Alison Herron
Email: aherron@swin.edu.au
Tel No(s)
Student ID Number: 2064762
Fax

Degree Being Undertaken: Ph.D.

List below the names of other Chief/Associate Investigators and Research Assistants (including those with access to identifiable data).

[Add (copy/post) cells as required for additional investigators/assistants. Append Student lists for class projects.]

Name & Title: Assoc Prof Elizabeth Brooks, Director, Business, Work & Ageing Centre for Research
Institutional Address: Swinburne University, Faculty of Business and Enterprise, PO Box 218, HAWTHORN 3122 Australia
Tel No(s): 9214-5040

Name & Title/Position: Assoc Prof Patricia Buckley
Institutional Address: Swinburne University, Faculty of Business and Enterprise, PO Box 218, HAWTHORN 3122 Australia
Tel No(s): 9214-5437

Proposed Period During Which Human Research Activity Requiring Ethics Approval Is Needed:

From 2014 to 2018

[Double-click on [ ] YES/[NO] 'check box' to select box, then enter Default Value as Checked [X] or leaving as Not Checked [ ]]

TYPE OF ACTIVITY
(Select as many boxes as applicable)

[ ] Research by Staff Member
[ ] Contract Research (attach copy of contract)
[ ] Supervised Postgraduate Research
[ ] Supervised Undergraduate Research
[ ] Supervised Class Projects

Subject Code & Short Title:

Broad Category of Research
Select one category box which best fits the application:

[ ] Social/Cultural/Humanities
[ ] Business/Management
[ ] Education/Training/Program Evaluation
[ ] Psychological/Brain/Neuro-sciences
[ ] Health/Safety
[ ] Engineering/Science/Technology

Other (please specify) ...........................................................................................................

Human Research Ethics Committee
Page 1

[** For research involving Clinical Trials or Ionising Radiation, please contact the Research Ethics Officer.]

### Official Use Only

- [ ] Higher Risk/Impact
- [ ] Minimal Risk/Low Impact Research Only
- [ ] SUHREC
- [ ] SHESC (HBS - A / B)
- [ ] SHESC (SBT - A / B)
- [ ] Other
- [ ] Notification Only

---

#### Human Research Risk/Review Classification (Nb Checking to be consistent with published risk criteria.)

To enable a determination as to whether prima facie your research activity is Minimal Risk and/or Low Impact, please clarify by selecting [X] any one or more boxes below as to whether your research activity involves:

[Double-click on YES/NO 'check box' to select X by entering in Default Value as Checked ☑ or leaving as Not Checked ☐]

<table>
<thead>
<tr>
<th>Vulnerable participants, children or those dependent on care*</th>
<th>Indigenous Peoples* or Special Cultural/Ethnic groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Externally funded research requiring HREC-level clearance*</td>
<td>Multi-centre/Other sites requiring HREC-level approval*</td>
</tr>
<tr>
<td>Research conducted overseas</td>
<td>Conflicts of interest or dual researcher-professional roles</td>
</tr>
<tr>
<td>Data access/use without an individual's prior consent*</td>
<td>Data access/use subject to statutory guidelines &amp;/or reporting*</td>
</tr>
<tr>
<td>Identification of participant individuals/groups in research outcomes without full consent or there is unclear consent for this*</td>
<td></td>
</tr>
<tr>
<td>Sensitive information/issues vis-à-vis context/impact (legal*, regulatory compliance*, commercial, professional, cultural, etc)</td>
<td></td>
</tr>
<tr>
<td>Personally intrusive/confronting or quite inconvenient/embarrassing questioning or other activity</td>
<td></td>
</tr>
<tr>
<td>Physically confining/invasive techniques or significant physical contact/stimulation (TMS*, X-ray*, CT scan*, MRI*, clothing change, etc)</td>
<td></td>
</tr>
<tr>
<td>Working in hazardous environments (asbestos dust*, infectious disease*, war or civil strife*, etc)</td>
<td></td>
</tr>
<tr>
<td>Handling hazardous substances (eg, asbestos*, radioactive material*, explosives*, etc) or equipment</td>
<td></td>
</tr>
<tr>
<td>Administration of medical/herbal substances*/treatments*</td>
<td>Administration of other (non-medical) substances/treatments</td>
</tr>
<tr>
<td>Health/medical diagnosis*/therapy*</td>
<td>Non-minimal impact therapeutic or other devices*/activity*</td>
</tr>
<tr>
<td>Screening for healthy participant inclusion/exclusion</td>
<td>Medical or psychiatric assessment/conditions*</td>
</tr>
<tr>
<td>Serious psychological profiling, investigation or exploration</td>
<td>Withdrawal of treatment/services or use of placebo</td>
</tr>
<tr>
<td>Withdrawal/substitution of educational/professional/commercial/recreational/other programs or services</td>
<td></td>
</tr>
<tr>
<td>Deception or covert observation</td>
<td>Limited or non-disclosure of research information/procedures</td>
</tr>
<tr>
<td>Participant recruitment/selection via third party</td>
<td>Human research activity commenced without clearance</td>
</tr>
<tr>
<td>Participation incentives, prizes or significant payments</td>
<td>Research placing researchers/assistants at risk</td>
</tr>
</tbody>
</table>

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PLEASE NOTE: If you have selected any one or more of the above boxes, your project will ordinarily be put for SUHREC ethical review. Items above marked * must be put to SUHREC proper. But in other cases, you may wish to put a case for expedited review by a SUHREC Sub-Committee (SHESC) in the (expandable) box below in relation to the criteria for determining risk/impact. If you put forward a case, then in the first instance your application will be put to the relevant SHESC. However, the relevant SHESC may still consider the project needs full SUHREC appraisal or SUHREC may review or override the SHESC decision.

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**Risk/Impact Checked with a Research & Ethics Advisor (REA)?**

Yes ☐ No ☐ REA Comment, Initials & Date:

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**Human Research Ethics Committee**

A1 WHY IS THE PROJECT TO BE UNDERTAKEN

As the target of multiple discourses, older workers are at the centre of major changes in the social construction of working life and retirement in an era of population ageing and global uncertainty. The professional grouping of engineering will be investigated as their much-needed skills are predicted to be in short supply with the increasing number of this baby boomer cohort reaching retirement age (Jorgensen & Taylor 2008).

This qualitative study will explore through in-depth interviews the experience of late working life in the current economic and social environment from the perspective of up to forty individual professionals, aged 55 to 70 years, who are in the paid workforce or have recently left the workforce. The perceptions of engineering professionals in late career will provide a more complex and nuanced understanding of the interaction of influences on their likelihood of continuing to contribute their high level of skills in the paid workforce. Late career working arrangements for professionals are increasingly diversified and flexible. Knowledge is scarce about how older professionals experience this period of their working life as a phenomenon in itself, as distinct from the predominant research lens of late career’s significance as an antecedent to retirement. Extending the knowledge base about the meaning of working life in late career and the macro, organisational and personal constraints and opportunities that interact in late career would be useful to industry, professional organisations and professionals themselves. The knowledge may also provide feedback on government policies advocating longer working life or delaying retirement.

While increased flexibility in employment options is promoted as an important organisational policy and a beneficial late career pathway prior to or as a transition to retirement, the literature has not focused on later life flexible working arrangements as a career stage in itself. Little is known in the Australian context of how late career professionals are experiencing working life in terms of the diversity of working arrangements, the constraints faced and the opportunities available. The dominant discourse assumes that older workers should prolong their working lives, however, there are dissonant voices in the literature challenging whether the flexibility of the current era is actually a positive experience for older workers and whether there is sufficient work available, even for highly skilled professionals (Brooke 2009; Gabriel, Gray & Goregaokar 2013). With uncertainty in labour market conditions predicted to continue for many years yet (Gabriel, Gray & Goregaokar 2013), this study will illuminate the views of professionals in the baby boomer cohort – a cohort at the crossroads of traditional and reinvented meanings of work and retirement.

The study aims to contribute new knowledge to the conceptualisation of late working life by exploring the perceptions of engineering professionals in Australia about their late career working experiences at the intersection of changing and often conflicting discourses from macro, organisational and individual/domestic contexts. The selection of participants for the study will reflect the diversity of working arrangements across organisations and self-employment, as well as time patterns including full-time, part-time and contract-based, and returning to work after a period of retirement.

The topic is well suited to qualitative study. In the words of Bansal & Corley (2012) this inductive study aims to “expose theoretical boundaries and push theoretical insights” (p.513) and develop “emergent theory to expose the phenomenon in new light” (p.511) in order to make a contribution to a better understanding of the complex nature of late working life for professionals in the early 21st century. Bansal, P & Corley, K 2012, ‘From the editors: publishing in ANU - Part 7: what’s different about qualitative research?’, Academy of Management Journal, vol. 55, no. 3, pp. 509-513.


A2 WHAT - BRIEF DESCRIPTION OF PROJECT

In plain English

This qualitative study investigates the experience of late working life in the current economic and social environment from the perspective of professionals aged 55 to 70 years. It will contribute rich, nuanced and local findings about late career employment patterns and the complex interaction of influences on continuing engagement in the paid workforce or exit to other interests. It particularly seeks to explore how engineering professionals perceive the constraints they face and opportunities available to them in late working life.
A3 HOW - PROCEDURES

Please detail clearly and sufficiently the proposed research/statistical method(s), procedures and instruments to be used in the project, including all screening and research procedures to which the participants will be subjected, and any risks which may arise adverse consequences.

Qualitative data will be collected for this research through semi-structured interviews with engineering professionals aged 55 to 70 years. Research will also involve collecting data from scholarly literature and web-based materials.

The study will involve semi-structured face to face or telephone interviews with up to forty late career professional engineers.

Recruitment of participants will be conducted through Professionals Australia who have agreed to publicise the study to members through electronic newsletters and emails. Recruitment publicity will target members based in or near Melbourne (for ease of face-to-face interview) and also include a request that members pass on the information to other engineering professionals they know in the target group who might be interested to participate. In the first quarter of 2014, the student researcher (Allison Herron) has been invited to talk briefly about the project and participant involvement, at a pre-retirement financial planning seminar being organised for Association members. In publicising the project, people will be asked to contact the student researcher, Alison Herron, directly by email or telephone for further information and to register their interest to participate. It is anticipated that recruitment will commence in February 2014.

The student researcher will respond to enquiries by email and telephone. All respondents will be contacted by telephone so the student researcher can explain the project and, for those who are interested, collect their contact details and basic information relevant to selection of participants – see Appendix A. The verbal screening questionnaire at Appendix A will be used as a guide to assist in creating a purposive sample of diverse working arrangements and engineering backgrounds and equal numbers of men and women, as well as to gather basic demographic information including age. A verbal format during the initial telephone call has been chosen so as not to burden respondents with additional paperwork and to establish and to contribute to rapport-building for the interview process.

Up to 40 professionals will be invited to participate in a face-to-face or telephone interview. They will be sent a letter in the form of a Plain Language Project Information Statement (Appendix B) and an Informed Consent Form (Appendix C). This will be done by post or email, according to the participant’s preference. For those who agree to be interviewed, a mutually convenient time and location will be arranged. Prior to the interview, participants will also be sent an outline of proposed questions (Appendix D) to enable them to have some time and opportunity to reflect on their responses. This approach aims to redress some of the power imbalance of the interview situation between researcher and participant and respects that participants’ spur of the moment responses in interviews may not represent their considered accounts of their opinions and experiences. It is anticipated that the interview process will commence in March/April 2014 and be completed by the end of 2014.

The interviewees will be asked to sign the Informed Consent Statement prior to participating in an interview, indicating the level of anonymity, confidentiality and privacy concerning their personal information as well as others who may be named in the interview.

Data will be collected using a semi-structured interview schedule (refer Appendix D). The interviews will be audio-recorded and last for approximately 60 minutes. All audio-recorded interviews will be transcribed.

The privacy and anonymity of participants and their employing organisation will be maintained. Data will be managed by Swinburne researchers in accord with Policy on Conduct of Research and Privacy Policy, as detailed in Project Consent Information Statement (Appendix B).

If you feel that it is necessary to include further material, please append.

A4 DESCRIBE ANY RISK THAT MAY ARISE TO THE PARTICIPANT / DONOR?

Risk to participants (and to researchers) can be real but does not need to be physical. Risk includes such as self esteem, regret, embarrassment, civil or criminal liability, disease, physical harm, loss of employment or professional standing, etc. Please consider such possibilities carefully.

Some research activities may put the participant at risk through what is being done or simply through their participation. Please describe the risk you perceive and the protective measures to be taken.

This research will pose no or minimal risk to participants. The interviews will focus on their experience of working in later life. Participation in the interviews is voluntary and participants will be provided with an outline of questions prior to the interview so they are fully aware of the expected content of the conversation. The interview questions are intended to prompt reflection by the interviewee and the style of the interview questions is non-confrontational and open-ended, with respondents free to respond as they wish and to decline to answer particular questions.

Interviews will be conducted at a private, mutually agreed location. Their responses will be de-identified. Respondents are informed that they can discontinue their participation in the study at any time.

Human Research Ethics Committee

(Aug 2004, Form amended August 2007)
A5 DESCRIBE ANY RISK THAT MAY ARISE TO THE RESEARCHER / ADMINISTRATOR?
Some research activities may put the researcher at risk through what is being done or simply through their participation. Please describe the risk you perceive and the protective measures to be taken.

There is no foreseeable risk to the researcher. The student researcher has had a career in social work and is an experienced interviewer. The interview questions are not likely to generate responses which could be distressing to the student researcher.

A6 WHAT BENEFITS ARE ANTICIPATED FROM THE PROJECT
Ethical principles would require that benefits flow from the activities – but please avoid grandiose claims.

(a) To the Participant (what and how so)
The findings of the project will be provided to the participants in summary form and made available for dissemination to the wider community. The interview data holds the promise of providing to professionals who are in late career and those transitioning to retirement valuable information from their peers about the pros and cons of potential pathways at this life stage. The interviews may serve as a useful reflective exercise for participants and stimulate their thinking about their current situation and future directions.

(b) More generally to society, profession, knowledge, understanding, etc, and how so.
By turning to older engineering professionals for narrative accounts of their experiences, this study is expected to provide valuable knowledge to enable professional associations to improve their support to their professional communities in late career and retirement. The findings will contribute a richer understanding of how current public policies aimed at extending working life are reflected in the reality of individual lives, specifically those in technical careers with skills deemed important to the economy. An improved awareness of the opportunities and constraints that these professionals are encountering in late career could contribute to industry practices and government policies that target professionals’ engagement with the workforce in the current economic climate. The findings could also potentially enhance approaches to retirement planning by addressing complexity and diversity of interacting influences in people’s lives.

The approach to data collection and interpretation is designed to contribute to scholarly research by illuminating the complexity of the late career experiences of professionals and contribute to theory development for working life and retirement transitions in the changing contexts of the early 21st century. While most studies to date apply a retirement lens to late career experiences and consider the older workforce as a whole, this study will use the lens of working life to explore the experiences of a specific occupational grouping of ongoing importance to the economy.

A7 POTENTIAL PROBLEMS
From time to time in the course of a research project important information, such as an individual found to be at risk, or entirely unforeseen events may come to pass. What procedures are in place to handle unexpected or particularly significant personal or other information that might come to light through the project, eg, unknown medical/psychiatric condition, a particularly distressed participant, civil or criminal liability, etc.

Due to the nature of the research, which seeks no controversial information, no potential problems are foreseen. In the event that interview participants are distressed they will be referred to the Student Development and Counselling Service at Swinburne University of Technology or another appropriate service of participant’s choice.

A8 PROFESSIONAL/ETHERICAL ABILITY & TRAINING (Researchers/Students/Assistants)
NS 1.15 Research must be conducted or supervised only by persons or teams with experience, qualifications and competence appropriate to the research... using (appropriate) facilities... (and with appropriate skills and resources for dealing with any contingencies...)

(a) Sufficiently detail what investigators/assistants will do in this project and their expertise/competence to do so.
The student researcher will be required to interact with, interview and converse with professionals in late career. She has had an extensive career as a social worker and has also been involved in academic research projects requiring interviewing that is sensitive and ethically observant. Prof Nita Cherry, who is the responsible investigator, has extensive experience in successfully conducting research projects that require such research techniques.

(b) Sufficiently detail any further training/qualifications required for investigators/assistants to carry out the project.
No additional training is necessary.

A9 FUTURE USE OF DATA
Will any of these data be used by yourself, your students or others for any purpose other than for this project as described in the protocol? If so please describe.

N/A
A10 EXTERNAL INVOLVEMENT
Is a body external to Swinburne involved in initiation or support of the project?
☐ Yes  Name of body/organisation: Professionals Australia
If an external body is associated with the project you must provide the HREC with detail of the arrangements, including details of any funding or other resources being provided. A copy of relevant pages from the contractual arrangements should be attached.
☐ No

A11 EXTERNAL APPROVALS
Projects involving other organisations or entities may require approval from other institutions or their ethics committees, etc. for such things as access to prospective participants, contact lists, data, facilities, etc. A copy of such approvals may be required to be provided to the HREC at the time of application or be made available as soon as possible. In which case, the project may not commence, until such evidence is provided.

Please indicate, as appropriate, if formal clearance/permission has been obtained or sought:

Institutional: Yes ☐ Documentation Attached ☐ or to follow ☐
Next of Kin (for special groups): Yes ☐ Documentation Attached ☐ or to follow ☐
(estimate when likely to be obtained)

Professionals Australia has written a letter outlining their support of the project and their willingness to assist with publicising the project to the members. The organisation is not providing any funding or ongoing resources to support the project. Support is by the provision of publicity to members about the project for recruitment purposes and provision of meeting space for interviews if required.

☐ No (please explain)

A12 RESEARCHER / SPONSOR RELATIONSHIP
Is there any relationship or association between the sponsor and any of the researchers listed in Section A of this form, for example are any of the researcher's directors, officers, employees, shareholders or promoters of the sponsor or do they receive any personal benefits from the sponsor under any other contracts or arrangements?
☐ Yes (please explain the relationship(s), including how a vested or conflict of interest situation does not arise.)

The student researcher’s spouse is a professional engineer and member of Professionals Australia. He will not have access to any confidential information collected through the research process. The initial approach to Professionals Australia was made by Assoc Prof Elizabeth Brooke, one of the named researchers and Director of Business, Work & Ageing Centre for Research, Faculty of Business & Enterprise. For transparency reasons, the spouse’s membership of Professionals Australia was stated at the first meeting between the organisation’s representative, Assoc Prof Brooke and the student researcher. It is not envisioned to give rise to any vested or conflict of interest.
SECTION B: ETHICAL ISSUES OVERVIEW

B ETHICAL ISSUES

(Double-click on YES/NO 'check box' to select box, then enter Default Value as Checked ☒ or leaving as Not Checked ☐.)

(a) Non-Limited Disclosure or Deception: Is any detail in relation to research purposes, methods or questions being withheld from participants? Or will deception of any kind be involved? Or any covert/undeclared observation? (Refer National Statement Chap 17)

YES ☐ NO ☒

(b) Does the data collection process involve access to confidential personal data (including access to data provided for a purpose other than this particular research project) without the prior consent of subjects?

YES ☐ NO ☒

(c) Will participants have pictures taken of them, e.g., photographs, video recordings?

If "YES", please explain how you intend to retain confidentiality and ultimately dispose of the material.

(d) If interviews are to be conducted, will they be record by electronic device?

If "Yes", please explain how you intend to retain confidentiality and ultimately dispose of the material.

YES ☐ NO ☒

(e) Will participants be asked to perform any acts or make statements which might compromise them, diminish self esteem or cause them embarrassment or regret (minimal, moderate or significant)?

YES ☐ NO ☒

(f) Might any aspect of your study reasonably be expected to place the participant at risk of criminal or civil liability (not just immediately or directly)?

YES ☐ NO ☒

(g) Might any aspect of your study reasonably be expected to place the participant at risk of damage to their professional/social/cultural/financial standing or employability?

YES ☐ NO ☒

(h) Will the research involve access to data banks subject to privacy legislation?*

(NOTE: Annual reporting to Government may be required on this item. For info please contact the Research Ethics Officer.)

(i) Will participants come into contact with any equipment which uses an electrical supply in any form e.g., audiometer, biofeedback, electrical stimulation, magnetic stimulation, etc.? If "YES", please outline below what safety precautions will be followed.

YES ☐ NO ☒

(j) Will any treatment be used with potentially unpleasant or harmful side effects?

YES ☐ NO ☒

(k) Does the research involve any stimuli, tasks, investigations or procedures which may be experienced by participants as stressful, noxious, aversive or unpleasant during or after the research procedures?

YES ☐ NO ☒

(l) Will the research involve the use of placebo control conditions or the withholding/substitution of treatment, programs or services (health, educational, commercial, other)?

YES ☐ NO ☒

(m) Will any samples of body fluid or body tissue be required specifically for the research which would not be required in the case of ordinary treatment?

YES ☐ NO ☒

(n) Will participants be fingerprinted or DNA "fingerprinted"?

YES ☐ NO ☒

(o) Are there in your opinion any other ethical issues involved in the research?

NOTE: If the answer to any of the above questions is "yes", please explain and justify below in sufficient clear detail. (The box below will expand to fit your response.)

Re Item (d): Data will be recorded on an audio recorder. These recordings will be transcribed. The audio files will be stored in a locked filing cabinet in the Faculty of Business and Enterprise. All electronic transcripts will be stored on a password-protected computer. Recordings will be available to the named researchers only. All data sources will be disposed of a minimum of five years after any publication based on the data, in accord with Swinburne Policy on the Conduct of Research.

Attach further documents if appropriate

Human Research Ethics Committee

SECTION C: PARTICIPANT DETAILS

C1 PARTICIPANT DETAILS
The composition of the participant group may, in some circumstances, distort and invalidate an outcome, and risks may arise through the composition of the participant group.

How many individual participants will be involved? (Number/hours ranges for which approval is sought)
Males: 20  Females: 20  Total participants: 40

Over what range of ages?
From (youngest): 55  To (oldest): 70

If there is a gender or age imbalance in the number of participants please explain why.
The study will aim for equal numbers of men and women but as only 9% of the engineering profession is female and the percentage is even lower in the older age groups, this may not be achievable. This study is specifically targeting people in the baby boomer cohort who are in late working life which has been defined as 55 – 70 for the purposes of this study and ease of understanding by potential participants. The average age of retirement for people who retired in the previous 5 years is 62.5 years for men and 60.3 years for women (Source: Retirement and Retirement Intentions, Australia, July 2010 to June 2011 (ABS cat. no. 6238.0). While the target age is 60 to 70, the range has been lowered to 55 in recognition of the lower average retirement age for women and to increase the likelihood of successfully recruiting women to the study.

C2 RECRUITMENT
How will participants be recruited/selected?
Please outline the process in sufficient detail how this is to occur.
Note: Where participants are obtained from or through schools, hospitals, prisons or other institutions, appropriate institutional or other authority will probably be needed. If soliciting for participants by advertisement or poster please attach proposed copy or text.

Recruitment of participants will be conducted through Professionals Australia who have agreed to publicise the study to members through electronic newsletters and emails. Recruitment publicity will target members based in or near Melbourne (for ease of face-to-face interview) and also include a request that members pass on the information to other engineering professionals they know in the target group who might be interested to participate. In the first quarter of 2014, the student researcher (Alison Herron) has been invited to talk briefly about the project and participant involvement, at a pre-retirement financial planning seminar being organised for Association members. In publicising the project, people will be asked to contact the student researcher, Alison Herron, directly by email or telephone for further information and to register their interest to participate.

The publication statement is not attached here but will be provided to SUHREC early in 2014 prior to commencement of recruitment.

The student researcher will respond to enquires by email and telephone. All respondents will be contacted by telephone so the student researcher can explain the project and, for those who are interested, collect their contact details and basic information relevant to selection of participants – see Appendix A. The verbal screening questionnaire at Appendix A will be used as a guide to assist in creating a purposive sample of diverse working arrangements and engineering backgrounds and equal numbers of men and women, as well as to gather basic demographic information including age. A verbal format during the initial telephone call has been chosen so as not to burden respondents with additional paperwork and to establish and to contribute to rapport-building for the interview process. The sample may include some recently retired professionals who wish to contribute their perspectives on the experience of late working life.

Up to 40 professionals will be invited to participate in a face-to-face or telephone interview. They will be sent a letter in the form of a Plain Language Project Information Statement (Appendix B) and an Informed Consent Form (Appendix C). This will be done by post or email, according to the participant’s preference. For those who agree to be interviewed, a mutually convenient time and location will be arranged.

C3 PRE-EXISTING CONDITIONS
In some situations an underlying medical or other significant condition of a participant may result in an otherwise relatively innocuous situation causing excessive stress and exacerbate the condition. Researchers must, therefore, be alert to such situations and be able to address the resulting issues.

Do participants have any medical or other significant condition of which you are aware, eg. diabetes, asthma, depression, epilepsy? What steps are in place to handle any resulting problems (you may need to correlate with A3, A4 and A7 of this form)?

Human Research Ethics Committee
(Aug 2004, Form amended August 2007)
C4 DISCLOSURE AND INFORMED CONSENT
How will participants be informed about the project in order to give valid consent:

☒ Consent Information Statement(s)/Letter(s) and Signed Consent Form(s) will be used.

☒ A copy must be attached to your application. A guide to consent instruments is given at the end of this form.

☐ Consent Information Statement(s)/Letter(s) and consent implied by return of anonymous questionnaire

☐ Verbal advice (Please explain how and why)

☐ Other (Please explain how and why)

Project Information Statement (Appendix B) and an Informed Consent Form (Appendix C)

Copies of appropriate consent instruments must be attached to your application. Please consult the Guide to Human Research Informed Consent instruments in carefully preparing informed consent instruments.

C5 COMPENSATION
Consent to participate must be freely given and not induced through the level of reward, perceived reward, or power relationship.
Provide details of any financial or other reward or inducement being offered to subjects for participation. Indicate the source of the funds.

No compensation or incentives will be provided.

C6 RELATIONSHIP TO INVESTIGATOR(S)
Free consent may be difficult to ensure if the participant is dependent upon the investigator for employment, assessments etc
Some relationships cause special ethical issues to arise
Are participants linked with the investigator through some particular relationship - eg employees ultimately responsible to or superiors of the investigator, students of investigator, family members, friends etc.

Participants will be recruited through publicity provided by a professional association (Professionals Australia). There is a small chance that participants could already be known to the student researcher conducting the interviews. Respondents known socially to the student researcher would not be interviewed.

C7 INVOLVEMENT OF SPECIAL GROUPS
Particular issues of consent may arise where special groups of participants are to be involved. There may be, for example, a need to obtain informed consent from persons other than the direct participant. Examples of such special groups include
special cultural groups - eg. Indigenous Australians; children and young persons (Guidelines section 4.2); groups with special circumstances - eg. persons with an intellectual or mental impairment (Guidelines s. 3.5)

Please identify and describe the nature of the groups and procedures used to obtain permission.

Note. Persons proposing research projects involving Indigenous Australians should consult with the relevant University manager of Indigenous programs prior to finalising definition of the project.

No involvement of special groups.

C8 PRIVACY
The University is subject to the Victorian Information Privacy and Health Records Acts as well as the Commonwealth Privacy Act and, in particular, the Information Health/National Privacy principles (IPPs/NHPPs/IPPs) set out therein and is required to report annually on projects which relate to or utilise particular records. Does the research involve access to data which was collected by an organisation for its own purposes (ie not specifically collected for this project) such as student records, other data banks, human pathology or diagnostic specimens provided by an institution(s)?

If yes, please indicate sources:

Researchers will not have access to databases of the professional association assisting with publicity. Staff of the professional association will distribute information about the project to members from their databases.

C9 LOCATION OF STUDY
Please indicate where the research will be carried out. If the research will not be on University premises permission of owner / occupier may be required. If so, please indicate what authority or permission may be required and how will be obtained. NB: Where required, please attach to this application evidence of authority obtained or provide the Secretary, HREC as soon as practicable.

The interviews will be carried out in Melbourne in a private and confidential space in the offices of Professionals Australia, the workplace of the participant or at an alternative neutral location convenient to the participant, and that is safe and appropriate for the researcher.
SECTION D: DATA & PUBLICATION ARRANGEMENTS (Nb Section D Revised Aug 2007)

PLEASE CONSIDER CAREFULLY YOUR RESPONSES TO THIS SECTION. YOU NEED TO BE CLEAR AS TO WHAT IS OCCURRING WITH RESPECT TO DATA COLLECTION, RETENTION AND DISPOSAL.


D1 DATA COLLECTION/RECORDING (Nb Section D1 Revised Aug 2007)

Please note that, with any information or data collected/retained, if any individual can reasonably be identified, the information can be deemed 'personal information' or 'health information' under National Health Information Privacy Principles (NHPPs/HPoPPs/IPPPs).

(a) How or in what form will data be collected/recorded?

[eg. notes, verbatim, audio and/or video recordings; transcriptions of recordings; recorded or signed consents; etc]

Interview data will be collected from each participant using notes and audio recordings. Transcripts will be made of the recording and each transcript will be provided with a project management number related to the participant for organisational purposes and to de-identify each participant.

(b) As regards any individual, in relation to any data collection or retention, you need to acknowledge either or both of the following:

- [ ] Double-click on [ ] ‘check box’ to select X by entering in Default Value as Checked [ ] or leaving as Not Checked [ ]
- [X] An Individual can be identified OR is Potentially Identifiable / Re-Identifiable
  
  (An individual can be identified at some point or by the very nature of the data collected/retained: at time of an interview, by signed consent form, identified or labelled voice or image recording, pen-and-paper questionnaire, on-line survey instruments, etc.
  
  Whilst data may not have (explicit) identifiers, an individual’s identity can still reasonably be worked out.
  
  Or data may have (explicit) identifiers removed and replaced by codes that permit matching of an individual with the data collected/retained, in which case it is possible to identify or re-identify the person to whom the data relates.)

- [ ] An Individual is Non- or Un-identifiable
  
  (Data collected/retained anonymously and with no reasonable possibility of being identified.)

Your acknowledgement may require further explanation or clarification; if so, please include in the following box.

Whilst the interview data may not have (explicit) identifiers, there is a small chance that an individual’s identity could be determined. However, as the information sought is not of a sensitive nature, and as every effort will be made to anonymise data, this risk is very low. Participants will be de-identified (Appendix B). Transcripts will be made of the recording and each transcript will be provided with a project management number related to the participant for organisational purposes and to de-identify each participant. Signed consent forms will be stored separately from the data.

D2 DATA SECURITY (Nb Section D2 Revised Aug 2007)

Please note that data must be held for sufficient time to allow reference. For data that is published this may be for as long as interest and discussion persists following publication. It is recommended that the minimum period for retention is at least 5 years from the date of publication but for specific types of research, such as clinical research, 15 years (or more) may be more appropriate. * (Sect 4.3 of Swinburne’s Policy on the Conduct of Research)

Please indicate how data (all types of data, including, eg. signed consent forms) will be securely retained (eg. electronic form in password-protected disk drive, locked filing cabinet, etc) and where? With more than one type of data, will the types be separately stored?

In your explanation, you will need to make clear how due confidentiality and/or anonymity will be maintained.

(a) During the study

Data will be collected via one-on-one interviews, which will be audio recorded using a digital recorder. Audio recordings will be transcribed using a word processing program (eg., Word) for the purpose of content analysis. Transcript documents will be saved on a password protected computer in the office of the first investigator (raw data e.g., print outs of transcripts, will be stored in a locked filing cabinet). Only the researchers named in Section A, have access to the data.

(b) Following completion of study

Following completion of the study, data will be stored on a secure medium (CD ROM) in a locked storage area in the Faculty of Business and Enterprise, and will be held there for a minimum of five years after any publication based on the data and will then be destroyed.

Human Research Ethics Committee
D3 PUBLICATION/OUTPUT

Please explain in sufficient detail:
(a) What, if any, publication (conference, news media, academic journal, other journal, etc) is envisaged following on or in relation to this project, both in terms of data proper and/or analysis of data?
(b) Will participants be informed about any envisaged research publication/outcome? (This information is normally to be included in the Information given prior to obtaining informed consent.)
(c) Would any participants be able to be identified through the publication of data proper or research findings? If so, explain why this is necessary.

(a) It is envisioned that a PhD thesis, a summary report on the findings, conference papers and academic articles will result from the research.
(b) Participants will be informed in the Project Consent Information Statement of the range of envisaged research outcomes and publications.
(c) See answer to D1

D4 INDIGENOUS ISSUES

Storage arrangements for data relating to research into Indigenous matters must be determined in compliance with the Policy on the Conduct of Research after consultation with the communities involved.

What consultation has taken place and what arrangements have been made?

No Indigenous issues.

D5 OTHER ISSUES

Are there any other issue relating to data collection, retention, use or disclosure which the ethics committee should be made aware of and, if so, please explain how you are to deal with this.

(If Research outcomes unduly impacting on any individual or group not directly participating, etc.)

No other issues.
**SECTION E: SUBSTANCES & CLINICAL ISSUES**

No matters in this section are applicable to the study or

**E1 ADMINISTRATION OF SUBSTANCES/AGENTS**

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<td>Total amounts to be administered</td>
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Anticipated effects:

**NOTE** If the research involves administration of foreign substances or invasive procedures, please attach a statement accepting responsibility for those procedures by a medical or paramedical practitioner with indemnity insurance.

☐ STATEMENT ATTACHED

**E2 BODY FLUIDS OR TISSUE**

What fluids or tissue? How will samples be obtained?

Frequency and volume

How are samples to be stored?

How will samples be disposed of?

Who will take the samples?

What are their qualifications for doing so?

Do participants carry, as far as you know, the Hepatitis B or HIV virus? If so how will the risks be handled.

Do participants carry, as far as you know, any other contagious diseases or viruses? If so how will the risks be handled.
**SECTION F  Declarations for Signature**

1. With respect to this project, I/We, the undersigned investigator(s)/assistant(s) agree:
   
   - To undertake human research activity or handle data confidentially in accordance with Swinburne requirements, including any standard or special ethics clearance conditions, under the proper direction of the responsible Swinburne manager and/or principal Swinburne (or other) researcher/supervisor.

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All listed applicants must sign. The Chief Investigator/Supervisor is also responsible for personnel subsequently joining the project. Expand this table or duplicate this page as required. NB This information is subject to Swinburne or external audit.

**** Please note that ****

PROJECTS MUST NOT COMMENCE WITHOUT PRIOR WRITTEN APPROVAL from the Human Research Ethics Committee (SUHREC) or its appropriate Subcommittee (SHESC)

2. Declaration of Compliance by Chief Investigator(s)/Student Supervisor(s).

I declare that the above project has been developed and will be conducted in accordance with relevant Swinburne standards, policies and codes of practice, including any standard or special conditions for on-going ethics clearance. I further declare that all listed and subsequently appointed researchers or assistants involved in this project will be made aware of the conditions of ethics approval as communicated to me, including approved documentation and procedures.

Signature & Date:

Name of Signatory & Position:

(Optional) Form checked by a Research & Ethics Advisor (REA)? Yes ☐ No ☐ REA Initials & Date: …………………

3. Endorsement of Head of Academic Unit (or Delegate) or Above.

I declare that this project has been developed and will be conducted in accordance with relevant Swinburne standards, policies and codes of practice, and that research merit, adequate resourcing and appropriate leadership/supervision.

Signature & Date:

Name of Signatory & Position:

(Please note: This endorsement must be given by an authorised official who is not also a chief or co-investigator of the project and who is not also the supervisor of a student investigator with an interest in the project.)

Human Research Ethics Committee

To: Nita and Alison

SUHREC Project 2013/287 Professionals working in later life: personal experiences and changing contexts
Professor Nita Cherry, Ms Alison Herron, A/Prof Elizabeth Brooke, A/Prof Patricia Buckley; FBE, Project Duration: 02/01/2014 To 30/06/2016 [Adjusted]

I refer to the ethical review of the above project protocol undertaken by a SUHREC Sub-committee (SHESC3). Your response to the review, as e-mailed on 22/12/2013 with attachment, accords with the feedback.

I am pleased to advise that, as submitted to date, the project must proceed in line with standard on-going ethics clearance conditions here outlined.

- All human research activity undertaken under Swinburne auspices must conform to Swinburne and external regulatory standards, including the current National Statement on Ethical Conduct in Human Research and with respect to secure data use, retention and disposal.

- The named Swinburne Chief Investigator/Supervisor remains responsible for any personnel appointed to or associated with the project being made aware of ethics clearance conditions, including research and consent procedures or instruments approved. Any change in chief investigator/.supervisor requires timely notification and SUHREC endorsement.

- The above project has been approved as submitted for ethical review by or on behalf of SUHREC. Amendments to approved procedures or instruments ordinarily require prior ethical appraisal/clearance. SUHREC must be notified immediately or as soon as possible thereafter of (a) any serious or unexpected adverse effects on participants any redress measures; (b)
proposed changes in protocols; and (c) unforeseen events which might affect continued ethical acceptability of the project.

- At a minimum, an annual report on the progress of the project is required as well as at the conclusion (or abandonment) of the project.

- A duly authorised external or internal audit of the project may be undertaken at any time.

Please contact the Research Ethics Office if you have any queries about on-going ethics clearance. The SUHREC project number should be quoted in communication. Chief Investigators/Supervisors should retain a copy of this e-mail as part of project recordkeeping.

Best wishes for the project. Kind regards,

Sheila

*******************************************************************************
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