Design Quality: Evaluating Quality as a Tool and the Potential Impact upon Design Outcomes of Quality Frameworks

Student: Dianne Summons
ID: 904342X
Course Code: DS001
Unit Code: HDR902
Supervisors: Dr Deirdre Barron, Dr. Margaret Zeegers
Abstract

The Australian Government has introduced a policy that requires universities to comply with quality and excellence programs to receive institutional funding. In this thesis I report on my research, which examined this policy agenda. In carrying out the research I focused on three issues. The first was the history of quality assurance and its use as a tool for managing organisational outcomes. The second was whether design school academics believe design can be measured within a quality framework and, if so, what they thought the impact of such measures might be on innovation. The third was where quality assurance frameworks have been an effective governmental monitoring tool.

In response to these issues, I have discussed the term “quality” and its transformation into complex frameworks with rigorous assessment metrics that demand institutional and organisational compliance. Within the duration of this study, I used surveys of design school academics to gain insight into what quality mean to designers. The findings suggest that, in its purest form, quality has increasingly evolved into a fit-for-purpose model and has emerged from manufacturing requirements to ensure product reliability; however, quality has become more sophisticated and pervasive in organisational and institutional processes. This has provided a context for the evolution of quality as a component of the Rudd government’s Excellence in Research for Australia (ERA) initiative.

This research is important, as it fills a gap in knowledge concerning the capacity for design and design research to be measured within a quality framework. It is particularly relevant, as design research can be electronic, written, an artefact or a combination of all, which increases problems of assessment, measurement and ranking. Design’s symbiotic relationship with its resulting object, structure, communication or artefact raises difficulties when metrics-based quality formulae are adopted for design and design research comparisons. This is because judgements about design are often deeply personal and are the result of cultural, gender and socio-economic influences. Unlike the sciences they cannot be clinically or statistically measured with regard to process improvement or intended outcomes and are open to individual interpretation.
While arguments for accountability persist, adherence to time frames and structural processes will impact upon tardiness and disorganisation. I argue, however, that quality improvements are obtainable and will be identifiable in the second generation of design. Improved research will enable greater scholarly knowledge and the provision of opportunities for more informed designers to produce a greater quality outcome.
Acknowledgments

I wish to acknowledge the generous assistance of both intellectual guidance and time offered by my supervisor Deirdre Barron. Without her encouragement and understanding through some difficult times this work would not have been completed. I also would like to thank Dr. Margaret Zeegers for supporting this research. Rachel Mosel provided the lifeline that ensured the work progressed to examination. Her professionalism and cheerfulness in face of all obstacles was greatly appreciated. Additionally, I am thankful for the assistance of both of my daughters, Justine and Natalie Ebenreuter. Each has been an inspiration to me and always available to listen to arguments that I am sure are not the usual requirements of most mother–daughter relationships. Lastly, the needling reminders and nagging of my friends Caryll, Glenn, Steph, Max, Michelle, John, Jane, Dorothea, Lauren and my sister Laraine and her husband Peter have ensured that I remained focused. To be able to complete this work and retain these important relationships is something that I am grateful for beyond my ability to express adequately in words.
Declaration

I Dianne Summons do declare that the thesis contains no material that has been accepted for the award to the candidate of any 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 and that where the work in this thesis is based on joint research or publications that the relative contributions of the respective workers or authors has been disclosed.

I acknowledge that this thesis has been professionally edited by Neil Conning of Neil Conning & Associates. This has been done to identify omissions of style and grammar while retaining my substantive content.

______________________________
Dianne Summons

______________________________
Date
# Table of Contents

ABSTRACT I

ACKNOWLEDGMENTS III

DECLARATION IV

TABLE OF CONTENTS V

FIGURES AND TABLES IX

ACRONYMS X

CHAPTER ONE: SYSTEMATIC INQUIRY 1

Introduction 1

Thesis Structure 8

PART I: REGULATION 14

CHAPTER TWO: QUALITY IS HERE TO STAY 15

Introduction 15

What is Quality? 17

Evolution 17

Quality – A Definition 22

Quality Control 25

Total Quality Management 27

Benchmarking 38

Drivers of Quality 40

Political 40

Economic 43

Technology 45

Summary 47

CHAPTER THREE: FRAMING QUALITY 49

Introduction 49

Quality Frameworks 51

What is a Framework? 51

Australian Quality Training Framework 52

The Australian Universities Quality Agency 53

The Business Excellence Framework 58

The International Organisation for Standardisation 64

The Research Quality Framework 66

Excellence in Research for Australia 69
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>155</td>
</tr>
<tr>
<td><strong>Rationale</strong></td>
<td>156</td>
</tr>
<tr>
<td>Analysis</td>
<td>156</td>
</tr>
<tr>
<td>Critical Theory</td>
<td>157</td>
</tr>
<tr>
<td>Economic Rationalism</td>
<td>159</td>
</tr>
<tr>
<td>Tools of Analysis</td>
<td>162</td>
</tr>
<tr>
<td>Interview Reliability</td>
<td>166</td>
</tr>
<tr>
<td><strong>Method of Analysis</strong></td>
<td>167</td>
</tr>
<tr>
<td>Questionnaires</td>
<td>167</td>
</tr>
<tr>
<td>Participants for Quantitative Analysis</td>
<td>168</td>
</tr>
<tr>
<td>Participants for Qualitative Analysis</td>
<td>170</td>
</tr>
<tr>
<td>Reliability</td>
<td>171</td>
</tr>
<tr>
<td>Materials</td>
<td>172</td>
</tr>
<tr>
<td>Design</td>
<td>173</td>
</tr>
<tr>
<td>Procedures</td>
<td>173</td>
</tr>
<tr>
<td><strong>Results</strong></td>
<td>174</td>
</tr>
<tr>
<td>Quantitative</td>
<td>174</td>
</tr>
<tr>
<td>Qualitative</td>
<td>190</td>
</tr>
<tr>
<td>What does &quot;design&quot; mean?</td>
<td>191</td>
</tr>
<tr>
<td>How do you measure the elements that make up design?</td>
<td>193</td>
</tr>
<tr>
<td>Define quality</td>
<td>194</td>
</tr>
<tr>
<td>Why do universities do research? What is the ultimate goal?</td>
<td>196</td>
</tr>
<tr>
<td>Discussion</td>
<td>197</td>
</tr>
<tr>
<td>Summary</td>
<td>205</td>
</tr>
<tr>
<td><strong>PART VI: CONTROL</strong></td>
<td>208</td>
</tr>
<tr>
<td><strong>CHAPTER SEVEN: AUSTRALIAN GOVERNMENT FUNDING – THE AGED CARE MODEL</strong></td>
<td>209</td>
</tr>
<tr>
<td>Introduction</td>
<td>209</td>
</tr>
<tr>
<td><strong>Making Quality Count in Aged Care</strong></td>
<td>211</td>
</tr>
<tr>
<td>Aged Care in Australia</td>
<td>211</td>
</tr>
<tr>
<td>Regulation</td>
<td>214</td>
</tr>
<tr>
<td>Compliance</td>
<td>218</td>
</tr>
<tr>
<td>Stimulating Quality Improvement</td>
<td>220</td>
</tr>
<tr>
<td>Legislating for Outcomes</td>
<td>224</td>
</tr>
<tr>
<td>Negotiating Mutually Beneficial Outcomes</td>
<td>227</td>
</tr>
<tr>
<td>Summary</td>
<td>230</td>
</tr>
<tr>
<td><strong>CHAPTER EIGHT: DISCUSSION</strong></td>
<td>233</td>
</tr>
<tr>
<td>Introduction</td>
<td>233</td>
</tr>
<tr>
<td><strong>Summary and Discussion</strong></td>
<td>234</td>
</tr>
<tr>
<td>Thesis Summary</td>
<td>234</td>
</tr>
<tr>
<td>Overall Need and Outcome</td>
<td>237</td>
</tr>
<tr>
<td>Thesis Contribution</td>
<td>238</td>
</tr>
<tr>
<td><strong>Future Developments</strong></td>
<td>240</td>
</tr>
<tr>
<td>Future Developments</td>
<td>240</td>
</tr>
<tr>
<td>Recommendations for Future Research</td>
<td>240</td>
</tr>
<tr>
<td>Future Quality Initiatives Developments</td>
<td>241</td>
</tr>
</tbody>
</table>
Figures and Tables

Figure 1. A definition of quality (Besterfield, 2009, p. 2) ................................................................. 23
Figure 2. TQM: The need, the issues and the shape it must take (Creech, 1994) ................................ 28
Figure 3. The single operation cost optimisation (SOCO) algorithm (Kajdan, 2007) ......................... 44
Figure 4: Control chart ....................................................................................................................... 45
Figure 5: Business excellence framework – system view .................................................................... 59
Figure 6. Respondents – design school participation ......................................................................... 168
Figure 7: Respondents’ Design Fields ............................................................................................... 169
Figure 8. Respondents – experience with quality frameworks ............................................................ 170
Figure 9. The outcomes of design are measurable ............................................................................. 177
Figure 10. Design elements can be measured within a quality framework ........................................ 177
Figure 11. Quality frameworks limit innovation ................................................................................. 178
Figure 12. Quality frameworks ensure that levels of excellence are met .............................................. 179
Figure 13. No experience and novice experience with quality frameworks ....................................... 180
Figure 14. Elementary and intermediate experience with quality frameworks .................................. 181
Figure 15. The lecturers’ quantitative responses to the 10 questions .................................................. 182
Figure 16. The outcomes of design are measurable, responses by level of experience with quality frameworks .................................................................................................................................................. 183
Figure 17. Quality frameworks ensure the measurement of design by informed practitioners .......... 184
Figure 18. Quality frameworks have the ability to measure design accurately .................................... 184
Figure 19. Design elements can be measured within a quality framework ........................................ 185
Figure 20. Design is poorer because of the need to comply with quality frameworks ....................... 186
Figure 21. Quality frameworks limit innovation ................................................................................ 187
Figure 22. Designers have to meet the conventions of their design discipline to produce a finished product ............................................................................................................................................... 187
Figure 23. Quality frameworks ensure that levels of excellence are met .............................................. 188
Figure 24. Compliance with a set statement of quality parameters will improve the outcomes of design .................................................................................................................................................. 189
Figure 25. Quality frameworks increase the excellence of design ...................................................... 190

Table 1. Acronyms used in this work .................................................................................................. x
Table 2. Seven steps to process problem-solving model ..................................................................... 31
Table 3. Times higher education and Quacquarelli Symonds indicators ............................................. 114
Table 4. SJTU weighting of criteria for academic ranking of world universities ................................. 115
Table 5. International students as a percentage of total studying 2008 ............................................. 116
Table 6. Australian wool industry judging criteria ............................................................................. 120
Table 7. Australia’s Best Cars annual review scoring criteria ............................................................. 121
Table 8. Design theorists by background and argument ..................................................................... 136
Table 9. Quantitative style versus qualitative style ............................................................................. 163
Table 10. Questionnaire definitions .................................................................................................. 165
Table 11. Quantitative questions percentage responses ..................................................................... 176
Table 12. What does design mean to you? ........................................................................................... 192
Table 13. How do you measure the elements that make up design? ................................................. 193
Table 14. Define quality ................................................................................................................... 195
Table 15. Why do universities do research? What is the ultimate goal? ............................................ 196
Table 16. Factors that contributed to improvements in aged care ...................................................... 228
Acronyms

For ease of readability and clarity of understanding I have restricted the use of acronyms (see Table 1). This has been to the exclusion of acronyms that, for many, are in everyday use.

Table 1. Acronyms used in this work

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANU</td>
<td>Australian National University</td>
</tr>
<tr>
<td>AQTF</td>
<td>Australian Quality Training Framework</td>
</tr>
<tr>
<td>ARC</td>
<td>Australia Research Council</td>
</tr>
<tr>
<td>AUQA</td>
<td>Australian Universities Quality Agency</td>
</tr>
<tr>
<td>BEF</td>
<td>Business Excellence Framework</td>
</tr>
<tr>
<td>CSU</td>
<td>Charles Sturt University</td>
</tr>
<tr>
<td>DSRQFL</td>
<td>Design School Response to Quality Framework Qualitative</td>
</tr>
<tr>
<td>DSRQFT</td>
<td>Design School Response to Quality Framework Quantitative</td>
</tr>
<tr>
<td>ERA</td>
<td>Excellence in Research for Australia</td>
</tr>
<tr>
<td>GO8</td>
<td>Group of Eight universities</td>
</tr>
<tr>
<td>ISO</td>
<td>International Organisation for Standardisation</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>Research and Experimental Development</td>
</tr>
<tr>
<td>RAE</td>
<td>Research Assessment Exercise</td>
</tr>
<tr>
<td>RMIT</td>
<td>Royal Melbourne Institution of Technology</td>
</tr>
<tr>
<td>RQF</td>
<td>Research Quality Framework</td>
</tr>
<tr>
<td>TAFE</td>
<td>Technical and Further Education</td>
</tr>
<tr>
<td>TQM</td>
<td>Total Quality Management</td>
</tr>
</tbody>
</table>
Chapter One: Systematic inquiry

All of humanity now has the option to make it successfully and sustainably, by virtue of our having minds, discovering principles and being able to employ these principles to do more with less (Fuller, 2008, p. 7).

Introduction

The above quote by Fuller is indicative of the global trend to produce more using fewer resources, both material and human. This trend is also evident in Australian higher education institutions as they face a growth in measures that evaluate the use of such resources against growth in outputs. This thesis takes one discipline, Design, and suggests possible impacts on the quality of design and design research of regulatory measures that are manifest in Australian Universities Quality Agency (AUQA) and the Excellence in Research for Australia (ERA) initiative. For the design research providers, understanding the processes and possible effects of quality frameworks and quality assurance will assist them to make informed decisions as they embark on such processes.

Regulation has become increasingly important in Australia since the 1980s. While quality control has existed, particularly in manufacturing that evolved from the guild systems of the late 13th century (American Society for Quality, 2008), other forms of regulation within areas such as the service sectors have often been a result of prudential requirements. Depending on structure, organisations are confronted with company law, financial audits, shareholder responsibilities, state and federal employment awards, import and export laws and body corporate legislation to name but a few requirements. Additional to this, is an organisation’s own internal necessity to meet various levels of quality. Customer service, staff satisfaction and the need for improved products and processes are all key indicators of how successfully an organisation meets quality expectations. Prior to the 1980s, many of these indicators of quality had been measured strictly. However, the ability to measure the wellness of an organisation as espoused by more recent quality assurance (International Standards Organisation, 2007; SAI Global, 2007), was often informal in nature and could have
been as simple as examining the sales graph. High sales, few warranty claims and repeat business indicated customer satisfaction; therefore, customers were responsible for defining an organisation’s quality through the evaluation of their buying habits.

The reliance on customer responses in determining issues of quality for quality management and quality control changed with the incremental shift towards quality assurance (Besterfield, 2009). Many of these changes were in the weighting of the importance of factors defining organisational quality. This shift in weighting became evident with the organisational objective of meeting the regulators’ requirements often surpassing the need to meet organisational quality indicators (Campbell Research and Consulting, 2007). These organisational changes in response to quality assurance measures have also been complicated with the use of the term “quality” and more recently, excellence in quality assurance programs. Often significant problems of terms and interpretation occur for the practitioner and tend to centre on what is meant by quality in quality assurance. Some will argue for a minimum set of standards to be met with regard to defined organisational goals and deliverables, while others will resort to the notion of excellence and the struggle to maintain ongoing continuous improvement and others will recognise the quality aspect as a measure that is used to compare the organisation with others (Campbell Research and Consulting, 2007). Lastly, organisations will question who is responsible for their quality outcomes and seek evidence of whether their traditional measures of self-assessment in this area still hold true.

Since the late 1990s, regulation has adopted a more defined role in determining outcomes for many European, Japanese, American as well as Australian organisations (Creech, 1994). This was a response to stronger global competition and because of the changing economic and political climate (American Society for Quality, 2008; Creech, 1994). Quality assurance also became a necessity for many industries in their demonstration of differentiation during the tendering process for government contracts or in attempts to gain government funding. This was partially due to scarce government resources, including the scarcity of contracts and funding dollars resulting from set budgets.
This scarcity has been accentuated by the need to demonstrate public good and public safety where public monies are spent (Australian Government, 2006). By the year 2000, it was increasingly difficult to gain a government contract without achieving the ISO components or another quality assurance seal of approval. Organisations sought approval from the funding bodies’ auditors to enable use of successfully funded projects as reference sites to compete for other contracts or government tenders or as is the case of the aged care sector, to maintain and increase existing levels of funding, thereby lifting their market share (Campbell Research and Consulting, 2007). Over time, the reliance of some sectors on government funding for maintenance of ongoing service level provision has as is the case with the aged care sector become reliant on compliance with an increasingly sophisticated set of key metrics outlined by the relevant funding agency. In the aged care sector this has resulted, for residential facilities, in four standards having 44 outcomes as deliverables. For aged care facilities to retain their funding, they must provide evidence of meeting these outcomes at all times (Aged Care Standards and Accreditation Agency Ltd, 2009).

By 2000, quality assurance had become an accepted organisational discipline across many industry groups and service sectors. This was largely because of the ability to use its outcomes to discriminate among competing groups: one such group is Higher Education in Australia with the AUQA as their quality assurance regulator. The AUQA has as its mission to give public assurance of Australia’s universities and institutions of higher educations quality, and within these institutions help to improve the academic quality (Australian Universities Quality Agency, 2000, AUQA’s Mission section). It seeks to fulfil this mission through means of audits of academic activities and the public reporting of those activities (Australian Universities Quality Agency, 2000, 2004).

In May 2004, The Backing Australia’s Ability II package introduced the plan for a new quality framework for Australian Research (National Tertiary Education Union, 2005). The Research Quality Framework (RQF) was the resultant strategy that aimed at increasing the quality of Australian Research and at the same time increases the effect of that research into public benefit. In November 2006, the Hon Julie Bishop MP Minister for Education, Science and Training, highlighted the intent of the RQF to enable assessment of Australian research against International benchmarks (Australian Government, 2006). This intent was identified with a view to Australia becoming a
leader in the assessment of impact of research and simultaneously provide clear evidence of public investment in research (Australian Government, 2006).

To be effective, these strategies require measurement of all aspects of research, including quality, product, influence, funding and public good. In October 2007, the federal election resulted in a change of power. The newly elected Labor Party undertook that a metrics-based assessment tool for research funding would be adopted. In 2008, Senator Carr advised via a media release that the ERA would replace the proposed RQF. The ERA would be a transparent, internationally recognised and streamlined quality assurance system.

The draft ERA submission Guidelines: Physical, Chemical and Earth Sciences (PCE) & Humanities and Creative Arts (HCA) Clusters (that is clusters one and two) identified that humanities and the creative arts cluster would include design (Australian Research Council, 2009d). In the provision of a framework, the ERA set its objectives as: providing stakeholder assurance with regard to Australia’s institutional research; understanding the current focus of research across Australia’s research facilities through a stocktaking process that identifies research excellence, identifies emerging research areas and development opportunities and presenting a platform for informed comparison of all research both national and international (Australian Research Council, 2009c).

The ERA is another level of regulation for the education sector. It is imperative for universities to understand that this regulation through quality initiatives demands the need for change and compliance. Design schools have their own unique set of issues with the new ERA; not the least of which is that design has been integrated into a very large category with the result being competing needs across the category. For design research to be successful in attracting research funding, it must demonstrate that it will meet all of the requirements of the ERA while maintaining compliance under the AUQA while exercising international competitiveness through conference papers, journal articles and participation in exhibitions.

The quality outcomes of any design school in Australian Universities will be affected, not only by the university policies and procedures, but also by the ability of
management staff to implement and maintain these within the university while the academic staff does so in the design areas. Design academics must demonstrate the ability to challenge and alter university policy and procedure where necessary and translate this through their discipline into research outcomes that will be measured under the ERA. Measurement through quality frameworks and quality assurance and how design school academics question or accept these structures becomes critical to this process. What impact is there on design in meeting regulators’ requirements, if any? Furthermore, how does this impact upon the quality of the finished product?

A 10-part questionnaire was sent to design school academics seeking answers to these questions. The responses indicated that design school academics reasoned that design could, in fact, be measured within a quality framework an important first phase to the quality process; however, they felt that this very process would limit innovation and that the quality frameworks could not guarantee accurate measurement nor ensure the meeting of levels of excellence.

These responses and perceptions are particularly useful and assist in the identification of potential implications for design schools and where the experience of other organisations and industry sectors can be leveraged to establish a response. One industry group that relies on accreditation and ongoing compliance to ensure positive government funding outcomes is the aged care industry. Like education, it is placed in the services sector and applies for increments to established funding levels via its numerous service providers. While there are many factors that influence funding decisions, the industry does utilise a model that relies on past achievement and compliance to underpin future funding outcomes.

An important lesson this industry provides is the ongoing nature of funding once allocated. It is extremely rare for funding to be withdrawn from a service provider once given in the aged care industry. Should a site inspection or spot visit issue a finding of non-compliance against the 44 items in the aged care outcomes, the agency typically gives notice to the service provider to rectify the area to regain compliance. Established funding levels are maintained while this process is completed and the period of ongoing scrutiny against these outcomes will be relative to the severity of the
non-compliance. Initial funding levels will be maintained until the non-compliance outcomes are resolved.

The reasons for ongoing support of the funded providers are socially and economically founded. To close a facility that has non-compliance would have a devastating effect on the families, friends and the local community for the displaced residents. Therefore, the severity of non-compliance has to be weighed against the needs of the residents. Economically, the initial cost for service provision under these programs is high when compared to the cost of resolving most non-compliance issues. To establish a new program in aged care is the same as for any other industry: resources must be allocated; staff are trained and both are housed with financial, technical and managerial support. This is an expensive process and one not usually subsidised by the funding authority. There is with some programs in aged care the ability to apply for and receive small capital expenditure budgets for the initial year of the program. However, ongoing administration of the program must be provided for from the allocated funding and is only viable for service providers where there is maintenance of current funding levels. In some instances, a number of funded programs being undertaken simultaneously propose the opportunity for gains from economies of scale and shared services structures.

While each industry is different and the structure that is presently envisaged by the ERA has industry specific differentiations, some of the arguments with regard to meeting compliance are the same: high establishment costs, administration, management and infrastructure costs. It is therefore conceivable to imagine that future shifts in the program could be made to maintain ongoing research relationships between universities and the government once they are established.

Other lessons that can be taken from this sector include the relationship with quality assurance; typically, the major service providers and recipients of government funding rely on their own quality assurance programs to support their business (RSL Care, 2009), taking back the responsibility from the funding bodies that they had initially forgone. Depending on their quality assurance program, this will be a measured response to the needs of their business and their relationship with their customers, staff and other stakeholders in the aged care sector. A reliance on a regulator’s quality
assurance process to meet these objectives would be difficult, and, as within the sector
there are numerous funding providers all with their own standards to be met as well as
statutory compliance from a number of different government departments.

Organisations and institutions that rigorously embrace the implicit standards of quality
assurance adopt quality assurance programs, such as the Australian Quality Training
Framework (AQTF), the Business Excellence Framework (BEF) and the International
Organisation for Standardisation (ISO) 9000, allow for values and practices that assist,
maintain and project a view of quality assurance. Many organisations perceive these
practices as desirable and as a way of meeting industry expectations and adopting a
philosophy that demonstrates the organisation’s ability to exceed minimum standards
with regard to service provision. One such organisation with this attitude is RSL Care.
It is a leading organisation in aged care in Queensland and NSW and as such, are a
major beneficiary of funding to the sector (RSL Care, 2009). They have adopted the
BEF as their quality assurance platform; however, it should be noted that they regard
this framework as one of aspirational excellence rather than compliance. To meet the
needs of all regulators in their industry, they have mapped the outcomes or items
depending on the funding bodies’ definitions against those contained in the BEF. In
this way, they argue that they meet their own strict level of excellence and remain
confident that at any time they meet the requirements of all funding bodies.

However, while there are similarities between the aged care and education sectors,
current funding of research to universities reflects a different model. In 2007 research
grants for outcomes to be produced were given via the Australia Research Council
(ARC); however, the current ERA proposes a different model. As a funding body it has
a tripartite arrangement with the ARC and AUQA. These bodies regulate the industry
sector that they are responsible for using measurement and compliance as the means
of testing. As design school academics argue, design can be measured; further, the
way it is measured and by whom will have the potential to create changes in design as
a discipline.
Thesis Structure

The title of this work is Design Quality: Evaluating Quality as a Tool and the Potential impact upon Design Outcomes of Quality Frameworks. To understand the issues raised by this title, the following initiatives were undertaken. Due to its paramount importance, an essential aspect to understand is the evolution and the ongoing role of quality with regard to this question. A literature review was undertaken and while the results are called upon for emphasis and clarity throughout the entire work, it remains the significant contributor to Chapters 2 to 5.

In Chapter 2, I seek to understand what is meant by quality; to do this I reflect upon a number of definitions, including those of Besterfield (2009), Crosby (1979), Follett (1924) and Juran (1964) who presented ideas that ranged from economic sustainability to fit-for-purpose. I put forward design school academics’ definition of quality, which was gained from surveying academics in this field (see Chapter 6). The meaning of the word “quality” and how it is defined in quality frameworks helps us to understand how quality as an ideal has been transformed into a tool for management and regulation. Starting with the ideation of quality as a concept I look at the evolution of total quality management (TQM) from the early days of artisans and guild formation through to quality control, quality management, quality frameworks and benchmarking.

To place these processes into context I undertook an overview of some of the political, economic and technical drivers of quality that impact upon research in higher education. I have worked within quality frameworks for more than 30 years; however, personally this work was still a voyage of discovery, reminder and reinforcement in many ways. I took the evolution of quality as my foundation and here I have utilised the excellent work of the American Society for Quality (2008). This historical beginning led me to the current and highly utilised tool of quality control. Here I gained insight from the work of Mayer (1971) and the more recent work of Besterfield (2009). The need to understand fully the TQM and its political, economic, social and behavioural nature is paramount to understanding quality frameworks. After reviewing literature concerning this topic (Black and Porter 1996; Powell 1995) I considered the work of Creech (1994) as outlined in his book *The Five Pillars of TQM: How to Make Total*
Quality Management Work for You, the most relevant for this thesis. The germinal nature of this text is supported by quality luminaries such as Drucker, who is cited in the Foreword to The Five Pillars of TQM: How to Make Total Quality Management Work for You. Creech’s (1994) TQM Model is a clear and concise model of how TQM will work effectively in a decentralised organisation that understands fully the precepts of operational leadership.

To explain some of the drivers of quality I draw on the work of Harman (2001), Vidovich (1999) and Vidovich and Porter (2002) as well as some of the relevant government department documents and papers, (see Department of Education and Science Training (2007)). Economic drivers were expanded upon through the arguments of Kajdan (2007) and his Single Operation Cost Optimisation Algorithm. To explain the relationship between information technology and quality I draw on the American Society for Quality (2008) and Besterfield (2009) once again. These three drivers are not the only drivers of quality but they illustrate that drivers of quality do exist and that these have led to the establishment of numerous quality frameworks.

The historical background and discussion of quality control, TQM and the political, economic and information technology drivers in Chapter 2 led to the work of Chapter 3, which addresses quality frameworks. There I present an overview of the AQTF, AUQA, BEF, ISO, RQF and ERA programs was undertaken and their relationship examined where one existed, such as in the case of the BEF and ISO group of products in industry. The AQTF, AUQA, BEF and ERA are utilised in the assessment of education and the ERA, AUQA, together with the ARC address higher education research. To complete this work, the documentation and manuals of the actual frameworks were studied for information; then from these frameworks, I explored the implications of the programs for organisations. It was important to this work to understand why the establishing and nurturing of compliance is important, to organisations, and how this is captured in external and some internal quality frameworks.

Having established what quality is and how it manifests itself within a number of frameworks that are important to this work, in Chapter 4 the focus narrowed to the tool that quality has become. Here I have presented how quality can define an organisation through process improvement, customer and staff satisfaction,
compliance and as a funding prerequisite. For this to occur, it is important to understand what I have called for the purpose of this work the “quality soldiers”. Those persons, are the front line of quality assurance, advocating for the meeting of the metrics of the quality system that they are duty-bound to uphold, for this reason, I have defined them as the internal and external gatekeepers. I have also sought to identify the reasons for ongoing quality, especially the components of risk mitigation, funding maximisation and prestige enhancement.

Finally, I have used aged care as an example of understanding what is it that an industry sector responds to that causes an increase in metrics-based compliance; how the management of outcomes may be directed differently depending on federal, state and individual service provision requirements and the maturity of the quality organisation. My choice of Aged Care is because, like Education, Health is a politically sensitive sector and further along the compliance pathway especially with respect to accreditation. Therefore, I argue that comparisons between these sectors will add insight to the potential for change in higher education. It is also important to understand what the impact of meeting quality outcomes is having on the employees of an organisation and upon its infrastructure. I also reviewed the audit and review processes of the regulator for higher education, the AUQA; in doing so, I looked at the outcomes of Charles Sturt University’s (CSU) actual audit, commendations, affirmations and recommendations. It was evident that the review and work required to maintain compliance is extensive and that this included a component of rework with continuous quality improvement as a preferred tool for progress.

Having explored quality from both a macro and micro perspective to provide clarity to this thesis I then look at design in Chapter 5. Underpinning this thesis is a question about the capacity for design to be measured. To address this question it was important to understand the players within the design world and theories that underpin the growing body of design knowledge; to do so, I examined what the literature offers with regard to design theorists who work across different design disciplines. The range of literature, which I drew on in answering this, was complex and is presented in four parts to facilitate reading.
First, I present literature concerned with what is meant by “design”, what it encompasses and how these concepts would be interpreted within a quality framework. Second, I present a selection of design theories. These theories are drawn from a number of disciplines covering but by no means limited to the disciplines of politics, science, economics, industrial design, architecture, mathematics, urban planning, digital media and cognitive engineering. Third, I look at the scholarship concerned with the issue of design as an independent discipline and, as an extension of that, the impact upon this of design across a number of disciplines. Fourth, scholarship relating to design research is presented. This part draws together understandings of factors that impact directly upon design as a discipline or within disciplines, including practice and innovation. This understanding established a foundation for Chapter 6 where further information from design school academics and managers is assessed.

The work until this point has been extensive by necessity, particularly with regard to understanding the evolution of quality and its history as a tool within Australia and internationally. In Chapter 6, I put forward the role played by design school academics in the outcomes of design and design research within a quality framework. This information was gained from surveying academics in this field. I do this to better understand Design Quality: Evaluating Quality as a Tool and the Potential Impact upon Design Outcomes of Quality Frameworks.

It is important to this research to understand not only design’s capacity to be measured via a quality framework but also the impact on design because of the need to comply with aspects of the framework. Audits, risk assessments and risk ratings are essential components of quality frameworks. These audit outcomes will impact upon an institution’s professional practice and will be reflected in the practice of design academics and future design research.

To address this gap in understanding I sent questionnaires to universities who offer design at an undergraduate and postgraduate level, as identified from the web pages of Australian universities. Aimed at capturing beliefs on the ability for design to be measured and the impact of quality frameworks on design outcomes, this questionnaire asks 10 questions of respondents; in addition, a further four questions
are asked of a smaller part of the sample and question how they would define design and quality.

Using comparative analysis, the data is examined across a number of biographical areas, including the sample group’s experience with quality frameworks. This data depicts the responses through their levels of experience that includes, none, novice, intermediate, advanced or expert. It is important to understand the level of experience with quality frameworks as universities already have to comply with AUQA and the introduction of ERA in 2010 will add another layer of compliance to university regulation. I argue that those universities that adopt these practices will be advantaged when competing for research funding, as they will be in a position to meet the requirements of the regulating agencies.

In Chapter 7 I draw on what can be learned from the aged care sector. This sector is more mature in quality adoption at the top level of the industry and less sophisticated at the single operator level. Aged care as a sector relies on government funding for survival; however, instead of student enrolment, aged care must fill allocated beds to do so. This chapter shares insight into the ways in which design schools can utilise quality to their advantage through a number of strategies to maximise outcomes and will initially look to leadership and management for a response that can be adopted at an institution level to imbue the collegiate culture with a quality mindset. The argument that a strategic response has to be met and married to an operational response will be expanded upon. This will require an understanding of the life cycle of policies, processes and outcomes management and once more, their relationship in meeting quality metrics. Stakeholder issues are imperative to most systems’ views and are imperative to any strategy to maximise opportunities arising from quality programs. For the purpose of this work stakeholders will be taken to mean: the organisation, all staff, all clients, all suppliers, government and statutory bodies and the community.

The capacity for increases in quality is therefore embedded in the institution’s ability to leverage knowledge and to actively participate in the benchmarking models as outlined in Chapter 2. To holistically aspire to excellence and to be able to provide tangible evidence of organisational excellence and how it is increasing design quality and
achieve this while meeting the requirements of all funding and compliance agencies and those of the institution is fundamental to success of the excellence program.

In Chapter 8, I have united these threads in my final summary and discussion. I have assessed both the overall needs and outcomes of quality frameworks, the potential for impact upon design and design school academics and the thesis contribution. I have also presented opportunities for future development and developed my recommendations accordingly.
Part I: Regulation
Chapter Two: Quality is here to stay

*Quality is a serious and difficult business. Like finance, it has to become an integral part of management* (Crosby in Creech 1994, p. 215).

**Introduction**

In this chapter, I seek to establish the foundations for understanding the quality framework aspect of the subject of this work, Design Quality: Evaluating Quality as a Tool and the Potential Impact upon Design Outcomes of Quality Frameworks; to understand the history of quality and in Chapter 3 investigate the manner in which quality has been embedded into distinct frameworks. I expand on the aspects of a number of frameworks, including those used in higher education and their relationship with regard to gaining government funding. In Chapter 4, I extend the discussion to include the influence of quality as a defining tool for organisational outcomes; then I will examine design and gain an understanding of how these two different yet clearly defined subject areas can unite to impact upon one another.

I argue that organisational quality drivers result in regulation that is either a rule, the need to comply with a rule or the ability to control through a rule. I will also demonstrate how organisations respond to regulation by adopting specific quality frameworks that will ensure they meet the requirements of regulations and their regulators at the level that satisfies their individual circumstances. In some circumstances it is the regulators, such as the formerly proposed RQF, who have developed the quality frameworks through committees and consultation to ensure compliance against specific metrics and conditions.

Regulation and as a result, quality in its many current forms, from quality control to TQM and quality frameworks, is here to stay, and this is important to understand. As quality is relevant to almost every decision we make, it perhaps poses no conflict that quality has become formalised across industry sectors, including education, health, sport, manufacturing, defence and service provision.
The persistence that defines quality is quite remarkable. We have had, and in some instances still exercise, quality control, quality assurance, TQM, quality management and excellence programs. Through these mechanisms we also employ best practice, benchmarking, performance management, process improvement, flow, statistical analysis, audits, self-assessment audits and regulation. This list is by no means exhaustive.

While working in the financial services sector in the 1990s, the organisation by which I was employed had two staff in its quality control team. Additionally, there was an external auditor with a small team that ensured we met all Company Law requirements and the requirements of the Australian Stock Exchange. This was an organisation that was in a highly regulated industry; however, the demands for this regulation to be managed by the quality team had not yet been mandated. At this time, regulation was typically under the jurisdiction of the accountants and the Finance team who consulted with the quality personnel on matters of interpretation.

In 2008, I was employed in the aged care sector; like the financial services sector, this industry is highly regulated. My employer was an organisation of approximately the same client-base and geographical coverage as my previous employer; yet, it consisted of nine full-time quality personnel and a head office team of 80. The roles of the head office team included quarterly auditing of the organisation’s site, operations, teams in areas of specific responsibility against quality indicators. These indicators included; human resources, information technology, finance, OH&S, learning and development, product, marketing and sales. Control charts were issued across all areas of the organisation and statistical data was gathered for comparison with organisational targets. These targets were set; taking into account industry norms, best practice objectives and the requirements of aged care regulators with the intention of demonstrating the organisation’s effectiveness in aged care management.

Together with this high level of regulation, every employee had quality as a key performance indicator. Currently, regulators that include external auditors, formally visit the organisation annually and informally at their will. Each operational site includes an administrator who has quality, in the form of compliance duties such as internal audit, as a percentage of their position description and duty statement. The 35
administrators and the percentage of time that quality deliverables were allocated for this duty was equivalent to 11 full-time employees. Furthermore, it is an organisational requirement that monthly continuous quality improvement meetings are held in all organisational geographical areas. In 2009, there are eight of these areas across Australia, each including one of the nine dedicated quality personnel who were managed by a team leader from head office. The area teams are dedicated to quality enhancement and are accountable for ensuring the compliance of fellow team members across their geographical area of responsibility.

This organisation is not unique and views itself as immature from the perspective of having a firmly embedded quality culture. Today, most sophisticated organisations, whether public or private have an overarching quality framework that embodies an organisational continuous quality improvement strategy as an outcome. This may be a result of the organisation’s attempt to encourage customers, triumph over competitors, appease regulators, win contracts, secure funding and improve their company or a combination of the above. Regardless of the motivation, for an organisation to adopt continuous quality improvement as a business strategy they have accepted a fundamental principle of quality systems namely that quality practices are necessary for survival. This is a principle that has taken time and effort to evolve.

**What is Quality?**

**Evolution**

The evolution of quality traces human endeavours from the guild system to the Industrial Revolution, through two major wars and the introduction to the 21st century: a journey of more than 700 years (American Society for Quality, 2008; Besterfield, 2009). This is a history of which, until the 19th and 20th centuries, focused on the outcomes of the Western world.

In the Western world, the quality movement had roots in the formation of guilds in the late 13th century (American Society for Quality, 2008). While it is plausible to believe that the earliest Neanderthal men and women, in the honing of their tools, adopted an "accept or reject" form of quality control, the early guilds formalised this process by
marking their products. To be a member of a guild often required an apprenticeship phase and then the acceptance of strict codes and laws relating to product and service quality (American Society for Quality, 2008). Quality was ensured as a result of the lengthy period of training enforced by the guilds (Besterfield, 2009). Guilds also appointed their own inspection committees to ensure standards were met and identified sub-standard goods with a special sign or symbol (American Society for Quality, 2008). In time, this symbol also came to identify an individual craftsman; this led to second symbols or marks being used on an item so that goods reflected who had made them. These customs led to the commencement and building of reputations, as well as the introduction of identification and branding. Individual identification and branding soon became a recognisable indicator of quality of craftsmanship for good or bad. Craftsmen who took pride in their creations placed value on labelling these marks on their work. This practice is still evident today with craftsmen such as silversmiths using hallmarks to reflect the fineness and quality of a product and, as a result, the skills and quality of the maker.

A guild model of like-minded craftsmen was adopted by the manufacturing industry in the early stages of the Industrial Revolution (American Society for Quality, 2008), as with the guilds, young boys served out an apprenticeship to provide them a trade. Their masters adopted a quality control model in the process of training their apprentices and in releasing their work for sale. While many apprenticeships were entered into, the master still had to ensure that quality was maintained at the level that would provide him with an income and further apprentices.

However, this is where things altered. The Industrial Revolution brought with it a specialisation of tasks within the factory system. With this specialisation came philosophers such as Smith, who Gomez-Mejia, Balkin and Cardy (2008) argue, followed on from earlier writers such as Sun Tzu, who wrote *The Art of War* in the 6th century BC and Machiavelli, whose work *The Prince* was published in 1513. *The Art of War* was a military strategy and outlined how in conflict, a combatant should reflect on their own strengths and weaknesses as well as those of the enemy. This is a view that is adopted by influential modern management still evident in current practices such as strengths, weaknesses, opportunities and threats analysis (Gomez-Mejia, et al., 2008). When giving ethical justification for the behaviour of state leadership, Machiavelli
argued that human beings were primarily motivated by self-interest and those in leadership positions need to use fear to maintain control (Gomez-Mejia, et al., 2008).

Smith (2008), a moral philosopher, wrote *An Inquiry into the Nature and Causes of the Wealth of Nations*, which moved away from these earlier writers. In this book, Smith explores process and the gaining of efficiencies through the organisation of work in terms of the division of labour (Gomez-Mejia, et al., 2008). These arguments, coupled with the perspectives of managers and thinkers of the day meant that factory processes became segmented. Craftsmen, who as guild members fully completed tasks, were now employed in the factories to only complete one component of a task (American Society for Quality, 2008). This was a practice that led to disempowerment and lack of autonomy at work (American Society for Quality, 2008) and resulted in a decline in workmanship, as there was no longer a requirement for skilled workers (Besterfield, 2009). Factory labourers had their proficiency measured through audits and inspections with faulty work either reworked or discarded (American Society for Quality, 2008), however, as Besterfield (2009) comments, in the early factory days, most products were simple and the overall quality was not greatly impacted upon. Additionally, the resulting increase in productivity made goods less expensive and thus resulted in lower customer expectations.

The factory system was particularly strong in the United States and in the late 19th century, Taylor sought to increase output without increasing the need for more skilled craftsmen (American Society for Quality, 2008). He did this by adopting a model that engaged engineers for factory planning and skilled craftsmen for management and inspection. This resulted in reduced quality, which in turn led to departments that specialised in isolating defective goods from the consumer (American Society for Quality, 2008).

It is timely to mention another pioneer in the evolution of quality management practices Parker Follett (Mary Parker Follett Foundation, 2008). A graduate of Radcliffe College in the United States of America, her early social work and interest in democracy and government led to the publication of her third book, *Creative Experience*, in 1924. This book closely examines the ongoing process of circular response. Being acknowledged by the management consultant Drucker as his guru,
Follett established herself as the 20th century originator of many cutting-edge management ideas. Follett’s initial focus was on process and situational leadership. Her management practices sought community-based and “win-win” solutions and sought to gain strength from human diversity (Mary Parker Follett Foundation, 2008).

In the early 20th century, Shewhart narrowed the creation of an end product from components into processes. In doing so, he removed the focus of quality from the whole to the components that contributed to the whole (American Society for Quality, 2008). The focus on process is particularly important to the story of the shift in components of processes and ensuing quality as by the early part of the 21st century quality frameworks increasingly look at process improvement as the building block by which quality is assured (Australian Universities Quality Agency, 2006b; International Standards Organisation, 2007; SAI Global, 2007). Shewhart proceeded to analyse data collected about processes through the development of a statistical chart. The chart controlled the variables of a product to see if those processes were stable and in control or whether they were the result of a special cause that could be fixed (American Society for Quality, 2008; Besterfield, 2009). This practice, it is argued, is the commencement of statistical quality control, resulting in control charts that are widely used today (American Society for Quality, 2008; Besterfield, 2009).

Deming also impacted upon the quality arena in the first half of the 20th century. Deming, a physicist who gained his widely published doctorate at Yale in 1928 (American Society for Quality, 2008), adapted his focus to one of a statistician and by adopting Shewhart’s statistical methods he became a leader of the quality movement in both Japan and the United States of America (American Society for Quality, 2008).

With the onset of the Second World War, quality control moved from being a post-production quality check through a unit-by-unit inspection to a method of sampling inspections (American Society for Quality, 2008). These sampling inspections were published as sampling tables and eventually incorporated into government contracts in the United States, where the armed forces sponsored training in quality techniques (American Society for Quality, 2008). Deming was retained as a consultant to the Secretary of War in America and through his work at this time, influenced many of the
statistical thinkers of the quality control movement, including intellectuals such as Working and Grant (American Society for Quality, 2008).

Deming published 14 points for management in which he outlined his science of management and his science of administration, whereby statistical techniques are used to discover cause and, as a result, be able to create constancy to better improve product and service (American Society for Quality, 2008). Deming rejected many current work practices and argued for a philosophy of quality rather than workers being required to meet quotas and standards through fear. Deming sought better employee relations with better training and autonomy, and the reliance on mass inspection for quality control (American Society for Quality, 2008; SAI Global, 2007). Lastly, Deming argued for organisations to cease purchasing exclusively based on price (American Society for Quality, 2008).

Like Deming and Follett, Juran searched for a universal set of principles, arguing as early as 1945 that senior management had to embrace quality for it to be realised in the end product (American Society for Quality, 2008). At that time in the United States of America, local quality control groups were forming into regional associations. Juran joined the Bell System as an engineer and in 1926 was assigned to a team to work on statistical quality control (American Society for Quality, 2008). As a teacher and writer, he developed the quality course, Managing for Quality in the 1940s. In 1951 he wrote the Quality Control Handbook and in 1970 co-authored Quality Planning and Analysis (American Society for Quality, 2008) with Gryna. His reputation saw him succeed at implementing quality programs in Japan where others had failed. These programs then impacted upon the quality arena in the US with Japan leading many quality outcomes at the time, especially new processes such as quality circles (American Society for Quality, 2008).

Drawing on the work of anthropologist Mead, Juran (1964) wrote his awarded work Managerial Breakthrough. In this work he examined the practical need for managers to overcome cultural patterns to be able to overcome resistance to change and through communication, ensure technical experts were not ignored (American Society for Quality, 2008). Juran (1964) was an elegant writer who was always interested in language. When talking about quality as a management tool, he argued that
ophelimity, that is economic satisfaction (Hutchinson Encyclopaedia, 2008), would be a far better descriptor (American Society for Quality, 2008). Following on from Juran’s (1964) argument, “quality” as a term, is exceedingly difficult to understand and define by design school academics as will be shown in Chapter 6.

By the late 1980s, statistical process control was being emphasised in the automotive industry and the US Department of Defence. By this time manufacturers were using these methods and extending their influence along their supply chain through contractual arrangements ensuring that their suppliers and in turn the suppliers to those suppliers used these tools. Therefore, from the beginning to the end of the supply chain each link was expected to ensure that statistical process control was being used effectively throughout the chain (Besterfield, 2009). By the 1990s, ISO 9000 was accepted as the world’s best practice for a quality system; while ISO 14000 received the honours for environmental management systems (Besterfield, 2009; International Standards Organisation, 2007). In today’s society, the new millennium has also impacted upon this evolution with the establishment of information technology as pivotal to ongoing quality management process (Besterfield, 2009).

Quality – A Definition

To understand what is meant by quality within the context of quality control, quality assurance and quality frameworks, it is important to understand the components that define quality management. Taking from Follett’s (1924), example we need to analyse, in an objective manner, what composes the activity of quality rather than be restricted to the desired outcomes. “Show me the evidence” is the catch phrase of most auditors and auditing models. Insight into the development of this rule of evidence is achieved by investigating the evolution of quality through the quality control phase and into the quality management and assurance phase. All of the phases clearly identified, as stages of the development of TQM are still evident today in areas of manufacturing and service industry management, including higher education and research.

The Random House Dictionary of the English Language defines quality as 15 different outcomes. A number of these outcomes refer to social standing while others refer to attributes. Definitions that are meaningful to this work include: 1. a characteristic,
property or attribute 2. character or nature, as belonging to or distinguishing a thing, 3. character with respect to excellence, fineness, etc., or grade of excellence, 4. high grade superior excellence, . . . 6. an accomplishment or attainment . . . 14. of or having superior quality (Random House, 2007, p. 1175).

In his technical book *Quality Control*, Besterfield (2009) discusses statistical quality control concepts, covering many of the processes required to meet process outcomes. Besterfield also identifies the attributes from his perspective accountable for quality outcomes and provides a quantified definition of quality as shown in Figure 1.

\[ Q = \frac{P}{E} \]

Where

- Q = Quality
- P = Performance
- E = Expectations

**Figure 1.** A definition of quality (Besterfield, 2009, p. 2).

This is an interesting model as it places quality within the arena of the user or recipient of a product or service. Where Q, for example, exceeds 1.0, this model would be used to show that quality has been achieved.

Besterfield (2009) tells us that the American Society for Quality argues that quality is a subjective work and is open to user interpretation. To demonstrate this, Besterfield (2009) quotes Nelson and Daniels work in *Quality Progress* (p.2) when saying that in technical usage, quality is either evidenced by “characteristics of a product or service that bear on its ability to satisfy stated or implied needs” (Besterfield, 2009, p. 2) or “a product or service that is free of deficiencies” (Besterfield, 2009, p. 2). This is a shift from Crosby’s definition “Quality is conformance to requirements” (in Kajdan, 2007, p. 55) that is of course unless requirements are specifically performance-based. Others, such as ISO (2008) and Kajdan (2007), skirt around these themes. Kajdan (2007) argues that quality is ultimately a value-based definition that quality is the level to which business excellence is attained. His (Kajdan, 2007) definition includes the final
product meeting criteria such as aesthetics, conformance, functionality, process excellence and the lowest possible costs to the producer.

In a similar vein, ISO 9000 (in Besterfield, 2009) states that quality is the degree to which a set of innate features meets their intended requirements whether stated, implied or obligatory. In this context, degree refers to a range from good to poor, and innate means something that is inherent, existing or fixed, and its features are quantitative or qualitative.

Further, Besterfield (2009) argues that quality is multi-dimensional, supported by citing Garvin’s work on the dimensions of quality for a plasma TV as being performance, features, conformance, reliability, durability, service, response, aesthetics and reputation. These nine dimensions, he further explains, show far greater penetration into what makes up the quality attributes evident in the very successful high-quality Japanese motor vehicle industry of the 1970s. The Japanese are cited as having three dimensions for their quality program, including reliability, conformance and aesthetics (Besterfield, 2009). It would be interesting to have a greater understanding of what made up conformance for the Japanese dimensions and to ascertain whether any of the dimensions used by Garvin are nested in any of their dimensions. A mapping exercise to complete this may show where terminology, while different between quality programs and processes, could equate to similar outcomes.

The Japanese manufacturing industry was not the only business sector to adopt quality indicators to describe their product or services. The British Standards Institution, like ISO 9000, has a fit-for-purpose definition of quality, looking at the ability of a product or service in total to be able to satisfy its requirements (JCU, 2003). In Australia, the James Cook University quote this on their website when discussing their commitment to quality. James Cook University also raise another very important issue: when discussing fit-for-purpose within the university, they state that there must be a clear purpose, supported by clear points of reference against which quality can be judged. However, James Cook University acknowledges that this is not enough in itself as the elements that contribute to clear purpose must also meet quality outcomes; these, they argue, may be expressed within a range of quality indicators (JCU, 2003).
The previous arguments are all interesting; however, they seem to reflect convenience. In all of these examples, where is the idea that quality is something superior; something to be striven for; a matter of outstanding merit and exceeding expectations, not merely meeting them irrespective of whose expectations they may be? When assessing these arguments it would appear that was right. Quality, especially quality that drives quality assurance and quality Juran (1964) frameworks is about economic satisfaction and therefore meets a market driven outcome without reference to excellence. Do organisations only seek to meet minimum standards to exist? Is a greater investment in quality a waste of shareholder resources with little advantage, if any? Would global increases of quality in all goods and services preclude more competitors from the market due to cost? Does the pursuit of quality function counter to international drivers such as the push to reduce global warming? What place does continuous quality improvement have in the quality continuum?

**Quality Control**

The practice of quality control can be traced back to the guild systems (discussed earlier) and the coding of products by individual craftspeople. With quality control, the origins of materials and the labour for components are traceable. However, it is also interesting to reflect upon how Random House defines quality control:

*qual/ity control*, a system for verifying and maintaining a desired level of quality in a product or process by careful planning, use of proper equipment, continued inspection, and corrective action where required (Random House, 2007, p. 1175).

This definition supports those above that depict fitness-for-purpose as the principal identifying characteristic of quality. Here the metric of desire has been identified; not what is attainable or achievable but rather what is wanted. Does this desire meet economic or shareholder expectations or does it succumb to market expectations and as a result meet those shareholder and economic desires over time as a result? Some organisations and even entire countries strive to use the very highest level attainable as their level of desirability. However, I would argue that where the arbitrary notion of desire causes conflict is where two products with the same specifications have differing levels of
desired quality in relation to their fitness for purpose. As a result, although individual quality control processes are subjective, products meet the requirements of being fit for purpose at very different ranges on a third party quality metric or indeed when compared with each other’s quality frameworks. Then of course there is the contrasting aspect where clones may be just as fit for purpose but are deemed by the public to be of a lesser quality because of the quality inherent in the brand of the original.

So how do we control quality? To gain insight into what makes up quality control as a discipline, I have relied very heavily on the work of Besterfield. His book *Quality Control* takes the reader through the beginnings of quality control, the areas of responsibility within a organisation, Deming’s 14 points that the BEF labels the principles (SAI Global, 2007) and then all of the tools of trade, such as qualifications, accountabilities, responsibilities and deliverables, of the quality controller (Besterfield, 2009). Having first put these concepts into print in the late 1970s, Besterfield (2009) has a holistic view of quality and includes all stakeholders in his analysis, as well as several important statistical measures.

Given these key attributes of quality control, how then did this discipline impact on the design of research? In 1971, Mayer in his journal article *Quality Control in Research* looked at the problem of quality control when applied to marketing research. Arguing that the idea of quality was not only little used or understood in the field of marketing research, relevance to both the problem and end user requirements are also often unspecified. This is partially because of all of the complex activities that go into making up research quality and also because of the reliability of marketing data. Further, Mayer (1971) listed 10 steps for reducing errors in marketing information through more rigorous design of the research, including: statistical quality control, acceptance sampling, control charts, sequential sampling, need for feedback, application of statistical, quality control, quality control of field operations, validation, statistical analyses and the quality rating of interviewers (Mayer, 1971).

Mayer (1971) underpinned this proposition by arguing that it was possible to impart quality to a study, not only through its design but also its
implementation; that once measurement processes were established, control could take place. Also it was suggested that some areas of research were easily verified for measurement, such as data input. However, the integrity of data collected, for example in the field, was not only difficult but also costly to verify and therefore often remained untested (Mayer, 1971).

**Total Quality Management**

The next stage in the evolution of quality is TQM, although, even with this evolution (as previously stated) all stages of the quality evolution are still evident in both the manufacturing and service industries and across different economies. When looking at the aspects of TQM it is also evident that we are investigating a demand-driven as opposed to a supply-driven economic response to the market.

The demand-driven organisational response to the market is evident in Creech’s (1994) book *The Five Pillars of TQM: How to Make Total Quality Management Work for You*. Creech explains the principles he pursued to improve the Tactical Air Command of the United States of America Air Force. This enabled the Tactical Air Command to achieve an outstanding level of success from a quality perspective in the Gulf War that was warmly acknowledged by Drucker and others in the foreword of the book (Creech, 1994).

Important to the idea of evolution of quality processes is to understand how this came about. The globalisation of trade is one of the key reasons TQM was not only required but also why it evolved. The problems with traditional styles of management in the United States of America were not previously apparent until competition for global markets commenced in earnest. This was because culturally accepted norms within organisations and economies hid problematic managerial issues (Creech, 1994). Globalisation also brought with it another phenomenon, the knowledgeable consumer society, one where consumers have become more astute (Creech). As Creech argues, when making decisions consumers will often ignore appeals to “buy local” and make buying decisions based on quality and durability. Concerns for their own personal economic position outweigh any anxiety they may have had for the impact on the local economy (Creech). Because of these outcomes, I argue that the need for change was
obvious and that organisations needed to look closely and objectively at their strengths and weaknesses and be prepared to change. With time, a number of change models have evolved. Creech argues that for change to be successful, it must meet four criteria. The first is for a dedicated holistic quality mindset one that overarches the human employment condition. The second is for leadership and vision within the change process. Decentralisation is also necessary and must allow for empowerment at every level to ensure commitment and common goals. Finally, is that the holistic nature of change must permeate every aspect and facet of the organisation.

These five pillars of principles, Creech (1994) describes (see Figure 2) as: Product – Focal Point for Purpose and Achievement; Process – Effectiveness Determines Product Worth; Leadership – It’s a Must and It’s Not Managership; Commitment – TQM Builds It and It creates Success and the Organisation.

![TQM Diagram]

The Five Pillars Of TQM

---

The first, Product – Focal Point for Purpose and Achievement is a mindset that deems the final product of an organisation the centre point for measuring quality. Employees will be required to have a wide view and perceive themselves and their roles in relation to the final product that results from their work. This view is essential to create the cohesion necessary to enable quality; to make this happen, organisations must define their product in a way that is meaningful to both internal and external customers. Therefore, it becomes clear that a product brings with it linkages to the other pillars. This is especially relevant in the product–process and the product–customer linkage.
For the linkages between the five pillars of TQM to be effective, a real sense of purpose that is achieved from shared common values and goals must be present in organisations. This purpose extends to individual employee reasons for seeking and maintaining employment with the organisation, their need to meet basic human needs for themselves and their families, their pride in the organisation and being a part of its success. Having professional and harmonious surroundings where one’s contribution is acknowledged is also inherent to purpose. Lastly, organisational leadership must be able to:

Create, articulate and implement common purpose . . . Teleocratic Leadership, leadership order by common purpose, is leadership that is future oriented, ever relevant, non-ritualized, non-habitual, always thinking, and always human . . . (Mobley and McKeown, in Creech, 1994, p. 164).

When leadership is able to achieve this commonality of purpose, then individual pride and professionalism will have as its outcome quality of product. Pride will therefore increase human output and unquality is unaffordable, so leadership has as a responsibility the organisational motivation of human endeavour (Creech, 1994). An example of this is when “Made in Japan” equated to inexpensive and poor quality goods; however, a transformation occurred to create a quality mindset and an extensive pride felt by Japanese management has meant a complete reversal of the meaning associated with this phrase. Taguchi an expert in process improvement methodologies tells us that “The most elusive edge in the new global competition is the galvanizing pride of excellence”, describing a manager who trades away quality to save costs as “worse than a thief” (in Creech, 1994, p. 168).

Process effectiveness determines product worth; the linkages of product to process are therefore essential to the success of a quality system must stem from the customer’s requirements in the customer–product–process cycle. In 1994, less than 25 per cent of United States of America companies considered customer expectations in their new product designs with only 22 per cent regularly using process improvement (Creech, 1994). The American education system, for example, has two distinct customers: the students and the end users of the services of the students. Looking closely at the
disconnection between employer expectations and the attributes of graduates, an argument can be made that school boards seem more intent on the students’ rights to graduate than of meeting the needs of future employers.

The analogy of the United States of America school boards assists in understanding the problems arising from not focusing on the customer–product step when defining processes. The customer–product step must therefore be clear and assist product conceptualisation. The step must also enable specificity and disciplined execution, as well as provide the ability to monitor success. The need for consistency especially with regard to workplace practices is underpinned by the argument that when organisations remain disciplined that costs will reduce as teamwork increases (Creech, 1994).

What do we mean when we talk about a disciplined organisation? Fundamental to a disciplined organisation are the universal standards of professionalism, shared methodologies and common performance data. Access and use of performance data will enable process improvement by continually seeking the most effective way of completing a task until a better way is established. Thus, performance data and process review will enable the process–product–customer result and complete the product circle that starts and finishes with the customer while the process is pivotal to the whole. Therefore, the full cycle is customer–product–process–product–customer; consequently, if it does not meet the organisation or the customers’ expectations, the cycle must be either recalibrated to meet the customers’ needs or improved to meet organisational requirements.

The differing needs of customers’ means that it is important for organisations to recognise what these needs are, what is required to meet the needs and how to achieve the fulfilment of the needs. In doing so, it is important to clarify the difference between a product, the outcome of effort or labour, and a process that progresses through interdependent steps leading to a result. From my experience, organisations must understand that processes lead to products and that a process is not an end in itself but a means to an end, the end being the product. Processes for measurement and assessment of the components of the process must identify and understand how each part of the production process interrelates to form the whole product. The understanding of each element of the process is critical to this process of assessment.
and possible modification or improvement. Therefore, assessment must develop process improvement, and for this to be effective it must have supervisory techniques that ensure rigorous emphasis with clarity of focus. The Florida Power and Light Company has formulated one successful process for assessment, which is outlined in the Seven Steps to Process Problem-solving Model (see Table 2).

Table 2. Seven steps to process problem-solving model

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>What’s the problem?</td>
</tr>
<tr>
<td>2</td>
<td>Where are we now?</td>
</tr>
<tr>
<td>3</td>
<td>What are the root causes?</td>
</tr>
<tr>
<td>4</td>
<td>What is needed to improve?</td>
</tr>
<tr>
<td>5</td>
<td>What happened from our actions?</td>
</tr>
<tr>
<td>6</td>
<td>How do we hold on to the improvement?</td>
</tr>
<tr>
<td>7</td>
<td>What is the next step to be addressed?</td>
</tr>
</tbody>
</table>

(Thiagarajan & Zairi, 1997)

To ensure that the model was effective, the team at Florida Power and Light Company made certain that each question in the model had dedicated resources assigned. Furthermore, to meet the needs of complex integrated processes, representation across teams and departments was guaranteed.

A more complex 10-point system developed by the Boeing Company addresses the key elements above and further specifically includes the customer in two of its steps. Firstly, they ask for their customers and their outputs to be identified and secondly, have we fully incorporated our customers’ measures of success into our processes? A presentation to Boeing personnel in 2000 summarised these requirements as “satisfying our customers by delighting their customers” (Mizer, 2000, p. 10). As with the team at Florida Power and Light Company, Boeing also identified other significant points as to who owns the problem and who has accountability. This enables the Boeing teams to clearly identify who is responsible for each process and who should be engaged when change is required (Mizer, 2000).
Like Besterfield (2009) and Mayer (1971), Creech (1994) relies on statistical analysis for understanding processes, their variability and the potential for improvement. Statistical quality control, statistical process control and quality loss function are a number of methods for statistical measurement of deviations in organisational processes for management analysis and use. These above methods are supported by a number of process-oriented tools, including: flow charts, affinity charts, control charts, deployment charts, arrow diagrams, cause-and-effect diagrams and check sheets.

According to the TQM model, leadership is not managership and is vital to TQM. The best tool kits, accountability charts, statistical analysis and techniques for addressing issues will not work unless leadership as opposed to managership is across the organisation and has a quality mindset (Creech, 1994). Leadership, as a concept has lost significance with the rise of managership; however, distributed leadership is critically important to successful TQM because products are vital to organisational drivers and results. The processes to provide a quality product must also include quality assurance. Furthermore, organisational structure is needed to support this outcome. For an organisation to succeed it must have appropriate leadership (Creech, 1994).

Effective leadership, I argue is proactive and, as such, has the ability to determine what is right for an organisation. When leadership as an organisational prerogative is implemented, the culture of vision and principles will fully engage with employees. Engaged employees will then have the commitment, the energy, the enthusiasm and the willingness to achieve organisational goals. Decentralisation offers us different outcomes when compared to centralisation; this is the fundamental difference between managership and leadership (Creech, 1994); a difference that results in decentralised nurturing leadership, which to be successful must be believed in at all levels across the organisation and must also be possible at all levels of the organisation (Creech). Once this decentralised structure is employed, the essential ingredient, leadership will enable organisations to be successful. A good example is the 275 per cent improvement in the Tactical Air Command that was the direct outcome of replacing centralised managership with distributed leadership (Creech). The ability to measure and maintain adequate tools for assessment will underpin the leadership vision across the organisation. These tools must be both internal, as stated above and external as
outlined in benchmarking practices (Creech, 1994). Lastly, to be successful, the outcome must be the focus of measurement and allow for individual creativity to achieve it.

When given goals, empowered employees will have the innovative ability and confidence to bring about the desired results (Creech, 1994). To achieve this, communication must be positive, open, unconvoluted and transparent – allowing for understanding, flexibility and appropriate listening and as a consequence lead to continual progress (Creech). The tools of measurement must be: simple, well defined, effective, underpin established goals, be championed by organisational leadership and only automated once these criteria have been achieved (Creech). Flexibility, on the other hand, must be expansive across the organisation, markets, the economy and must allow for ongoing adaptation to changing conditions through the pursuit of continuous quality improvement in all of these areas and with all stakeholders (Creech, 1994).

The commitment step – posits that TQM builds it and creates success through organisational improvement. To be successful and objective, the organisation must have unqualified commitment to the goals that will ensure continuous quality improvement as an outcome from their employees. Organisational policies and practices can demand continuous quality improvement; however, the decentralised leadership style (as outlined above) will propel these policies in such a way as to enable commitment to them (Creech, 1994).

As argued before, traditional comparative advantage is diminishing with globalisation; and because of this the employee becomes the differentiator. Employee desire and the resulting commitment to meet organisational objectives is the new power that organisations have with which to gain a competitive edge. United States of America poll results from the last half of the 20th century depict that to harness this power, organisations must ensure that their employees feel stable and engaged through consultation, better tools of trade, transparent communication, performance-based pay structures and reduced pressure on the job (Creech, 1994). These results illustrate that when addressed, the key issues identified will lead to greater pride in one’s organisation and as a result, the desire to do better. Therefore, a higher level of
motivation and commitment to the organisation is required, which in turn will foster the necessary competitive advantage.

One aspect that alienates employees from the workplace is stress. The inability to have any control over roles can lead to increased stress and “burnout” for employees. This in turn has led to employees having little respect for their organisations and as a result, not working as consistently or as effectively as they may have in the past (Creech, 1994). One of the reasons provided by employees is the behaviour of their manager and in particular, their ethical standards, which is a result of “managerialism” and a lack of decentralised leadership (Creech).

Workers have little or no desire to work harder, as there is no incentive to do so with regard to remuneration; this could lead to a widespread behaviour of performing to the minimal standard to retain one’s role. The IBM philosophy is interesting as it changes the focus from the employee to the employer. It does so by changing the ethos of “Put you hearts in the business, and the business in your hearts” (Creech, 1994, p. 407) to that of “If you will put the business in their hearts, they will put their hearts in the business” (Creech, 1994, p. 407). Therefore, the sharing of organisational success will create the commitment necessary to build it; this is because employees are more interested in equity of pay that is to be rewarded based on what they deserve rather than equality of pay: the same rate for the same level of work (Creech).

The decision-makers in organisations, be it managers, directors, shareholders, unions, employee groups or any other stakeholders must recognise this equity as having value. United States of America companies in the 1990s were concerned with the increasing costs of labour expressing that they often felt and argued that any increase to rates of pay would only make them uncompetitive (Creech, 1994). Decision-makers in wage negotiations not only included organisational management, but also often included union management, which was positioned to assist employees with their wage demands. Historically, unions have maintained this role because they have felt that their members have gained through confrontation, not as a result of the type of cooperation required for an equity-based model.
Employee commitment would also be greater if employees had a greater understanding of the organisation balance sheet and profit and loss accounts. Understanding these matters and an organisation’s position in relation to its competitors should underpin a greater understanding of employee remuneration. Employee understanding of remuneration is often limited to net pay and excludes add on costs, such as health and retirement investments that are contributed on the employee’s behalf. An organisation’s quality, productivity and profitability need to be the business of every employee; however, a centralistic management style alienates many from this important information (Creech, 1994).

One reason that the centralistic management style achieves this alienation is that it develops a two-class system. At one level are the executives and managers who share in one loop of reward and knowledge, while their subordinates, the workers, often participate at a different level. Workers understand a different pay rate for different work; what they cannot understand is when they are marginalised from bonuses and the benefits that the management team enjoys. It is interesting, given the hierarchical nature of Japanese culture, that their organisations appear to have more liberal employee relations than their American counterparts (Creech, 1994). Examples of this include the motor vehicle manufacturers Toyota and Honda that reflect “widespread involvement, shared goals, healthy interactions, and a common language of purpose” (Creech, 1994, p. 417). While these companies are by no means perfect and neither are their offspring offices in the United States of America, as a comparison they do excel over comparable American organisations (Creech). This is easily explained given their decentralised leadership style that is inclusive and one that values teams in their structure (Creech, 1994).

While the Japanese are by no means unique in this area, they did have to overcome a culture that had foundations in autocratic managership to establish decentralised leadership with its positive gains. However, they have not been without their critics. Among the union movement’s advocates are Parker and Slaughter (in Creech, 1994, p.419), who argue that work teams are merely a device for union busting, and further label it at one point as management by stress (Creech, 1994). Some unions argue that the team concept reduces collective bargaining rights while other unions suggest it is limited to looking at cost saving outcomes and not meaningful worker involvement.
(Creech). The results are interesting, however, as during the late 1990s, the Japanese organisations and their sites within the United States of America experienced less labour disruption and higher staff satisfaction levels than those experienced by their American counterparts (Creech). The ability for employees to strike to gain job security is coming to an end, as the results of these practices, combined with the realities of globalisation, will mean that more organisations will seek outside supplies when internal supplies are threatened. Other aspects of an organisation’s entire business, such as the survival of subsidiaries, will also be threatened because of strike action. Unions and organisations will have to establish common ground if they are to manage the outcomes of increased global competition (Creech, 1994).

I argue that there are other aspects that will improve organisations. These qualities include ethical considerations and the ability of organisations to enact their Credo at all times. To benefit from this, the focus of leadership must be to permeate their organisations with their ethics and creeds, then to ensure that every decision made falls within these parameters, while remaining cost-conscious. Organisations must have the ability to examine costs from a “bottom-up” perspective and reduce waste where it is evident. Understanding the contribution that employees bring to process improvement is vital, as often managers fail to be hands-on and therefore not sufficiently informed about the subtleties of a process, whereas the employee brings expert knowledge of the process that they are responsible for. Those working in the process are also aware of potential hidden costs that will be masked to other onlookers.

The Five Pillars model provides a foundation for organisational decision-making and establishes the next stage, which consists of what to do and when to do it. For change to be effective it must, however, be complete. It cannot be piecemeal nor suggest that “one size fits all”. Change must be measured and tailored to each organisation’s needs and systems must be designed to meet objectives. The measured approach must be clearly articulated and shared openly with every person in the organisation so that converts are involved and committed to organisational outcomes.

The team model assists in this endeavour to ensure the best possible outcomes of decentralisation and the TQM system as it builds cooperation and effective interaction.
These teams are permanent, in contrast to ad hoc teams brought together to fulfil short-term projects. Each team member has an expectation of leadership and each team requires a team leader. The teams must also achieve ownership over the aspect of the organisation that they have been employed to influence. Rationality and context to team outcomes will shape the internal team, as well as organisational, relationships and will be achieved through appropriate team size.

The teams and the organisation as a whole should nurture a competitive spirit, as this can lead to organisational success and team spirit. Organisations can demonstrate competition by measurement, for example by score boarding, comparison and feedback. These measurements will enhance employee and organisational perspective. Feedback will inform all employees and as a result increase job security. This is because the reality of globalisation will mean that employees will need to understand their strengths and weaknesses and their potential for improvement in relation to competitors to be able to understand the organisation they work for and feel secure in relation to their role within it. To achieve this level of knowledge with any degree of accuracy they must be objective in all of these assessments. The need to find facts and to understand them will be driven in such a way as to lead to improvement.

Information can only improve an organisation if it provides understanding of what is positive or negative and suggests that where there are shortcomings, actions must be employed to improve upon them and where successes are experienced, they may be replicated where possible.

Knowledge gives a sense of ownership and with it a true sense of belonging. Ownership gives authority, accountability and the ability to enjoy the resulting pride of whatever aspect one has ownership. This can be at an individual, team or organisational level. Ownership also brings with it obligations stemming from both commitment and accountability and do not work where ownership is delegated at only the upper management levels such as chief executive officer and first level management. I contend that Creech’s arguments are supported by modern management practices and will endure with the prevalence of quality frameworks, such as the BEF and IOS, that promote leadership and decentralisation (International Standards Organisation, 2007; SAI Global, 2007). Decentralisation is the only effective tool to ensure a robust TQM system (Creech, 1994).
Benchmarking

With the persistence and evolution of quality systems into alternative quality management responses, particularly TQM, it is important to mention the focus on continuous improvement and the role of benchmarking. It is not that benchmarking as a process is in itself entirely new: Stone Age men and women must have benchmarked subsequent tools against existing ones or there would have been no progress from simple implements to the construction of more complex ones. However, benchmarking as a method for defining, explaining and improving quality via process improvement has come to the fore with the sophistication of TQM.

Benchmarking has been adopted by many organisations for a number of reasons; with some organisations it is simply to satisfy their need to demonstrate the provision of “best value” and thereby demonstrate to taxpayers value for spending from the public purse or their increased public accountability (Bowerman & Ball, 2000). Bowerman and Ball conducted research into the benchmarking practices of local authorities in the UK; the motivation for the benchmarking of local authorities was more about demonstrating good performance than promoting best practice. Hill (2000), the Director of Business Development for the American Productivity and Quality Centre, delivered a paper about benchmarking and best practice to the 54th Annual American Society for Qualities Congress. In this paper, Hill argues that benchmarking has only one objective – that of performance improvement. Codling (in Ellis, 2006) adds to this argument, claiming that benchmarking is a point of comparison against which all else can be compared. Some of the tools available for benchmarking highlight the ability to use benchmarking practices to motivate organisations and their people about change, increased knowledge and as a result increased quality through process improvement (Hill, 2000).

Benchmarking is about exploitation of best practices that will drive best performance (Hill, 2000). It is an operational response (Deming, 2008) and will be dependent on the level of benchmarking maturity of the organisation (Ellis, 2006). To be successful, an organisation has to measure and fully understand its own processes. This organisation then needs to identify other organisations that are “best in class” for their corresponding processes and adapt these to improve the quality and outputs of their
own. Deming cautions organisations against limiting benchmarking practices to competitors in their own industry and cites examples of effective benchmarking outcomes between hotels and hospitals for check-in procedures and the aviation industry and racing car teams for pit-stop rotation times for maintenance processes. Benchmarking as a strategy is important for design as design research occurs in many disciplines from architecture to multimedia design. Universities and organisations will have a multitude of like-minded organisations against which they can benchmark, as well as the capacity for focusing on processes successfully implemented by non-design-driven organisations.

Given these opportunities for design, Camp (1989) articulates that for any benchmarking activity to be successful it is fundamentally a numbers game. Not only do organisations need to know their own processes but they also need to know the metrics of the other members of their industry and seek to adopt practices that will ensure that the uppermost levels of quality are met. Camp reminds us that knowing that there are differences in the metrics is meaningless without understanding the processes that have led to these differences. Variations in processes and the adoption of rectification strategies into the process improvement program will only be successful with the concerted support of management and employee involvement (Camp). It is important to remember that this does not reduce the relevance of understanding the strategic, operational and financial indicators that assist with process improvement (Hill, 2000).

The models for maximising benchmarking effectiveness are essential to the success of the process (Hill, 2000; Kablan & Dweiri, 2003). In her paper, ‘All Inclusive Benchmarking’, Ellis (2006) outlines two models for clinical practice in health services. I argue that there are a number of parallels between the healthcare industry and education, which I will explain in more detail in Chapter 7. The Ellis model for benchmarking in health services can be used in any service industry. Through her model, Ellis follows the benchmarking cycle from performance-based processes through to the patient/client experience. This, I argue, is also central to quality design outcomes because the performance cycle allows for the benchmarking process to transition from being competitive, comparative, collaborative through to practice management and user-centred client deliverables. This sees the data shift from
quantitative to qualitative as the needs of the recipient of services are brought into the model, an important step for design (Ellis, 2006).

The shifts in data collection and analysis have led to the increased focus on mathematical models. Mathematical models have the ability to measure overall benchmarking effectiveness and optimal resource allocation and this has led to increased development of these models (Kablan & Dweiri, 2003). More recent mathematical models have closely examined the multi-dimensional problem of benchmarking and have offered complex frameworks that are generic in nature and seek to demonstrate overall effectiveness of a benchmarking process (Kablan & Dweiri, 2003). I argue this mathematising of benchmarking has contributed to the perceived stature and validity of the benchmarking process, and because of the relationship with quality processes this has impacted on the quality suite of tools.

**Drivers of Quality**

**Political**

It is important to understand that mathematical models seek to validate not just the effectiveness of benchmarking practices but also to support and promote the business that is quality. Quality is now adopted by many organisations as an appropriate method for not only demonstrating their willingness to excel and improve, but also to identify them as being among the best. For those that remain sceptical about the pervasiveness of quality, the four ISO ticks of approval against many industry logos will, in part, address this scepticism. Service such as RSL Care for example, will state in all marketing material that they are either ISO assured, a Six Sigma organisation or that they have an excellence program in place (RSL Care, 2009). They do so to add credibility to the services that they provide and to further demonstrate the responsibility that they as an organisation have to their customers by ensuring standards of quality are met.

The justification is simple: if organisations cannot demonstrate that they have an external quality assurance program or that their internal one is of an equal rigour to industry programs, then these organisations will limit their access to federal, state and
local government-funded projects and they will experience increasing difficulty competing with or being awarded contracts from any quality assured organisation. The reason for this is as simple: quality assurance programs have, as part of their accreditation process, a contract review process. In this, suppliers must demonstrate that they have quality assurance to the same level as that of the customer organisation, thereby ensuring that in time all organisations must be quality assured to exist.

But how did we arrive at this position and given the focus of this study, where is design and higher education situated? Vidovich (2002), in a paper presented at the Australia Association for Research in Education Conference in 2002, stated that quality, in both the public and private sectors including in education, has increasingly become a global policy discussion. Quality and quality assurance policies are mechanisms for accountability in the public sector; these policies are an indirect influence that have evolved as a response to policies of devolution, decentralisation and deregulation (Vidovich, 2002).

In May 2004, the RQF was announced as a federal strategy by the then Liberal government of Australia to meet the Backing Australia’s Ability II package (in National Tertiary Education Union, 2005). In November 2006, the Minister for Education, Science and Training, the Hon Julie Bishop MP (Australian Government, 2006) stated that the desired outcome of this strategy was increased quality, resulting in public good. The RQF was to preside over all federally funded research. As well as research emanating from universities, the work of other research organisations was to be targeted. These included institutions such as the Walter and Eliza Hall Institution of Medical Research and the Australian Commonwealth Scientific and Industrial Research Organisation.

In October 2007, the federal election resulted in a change of parties in power. Minister Bishop became Deputy Leader of the Liberal Party in opposition and the Hon Julia Gillard MP became Minister for Education and Deputy Prime Minister of Australia. On 21 December 2007, the proposed RQF was also relegated to the backbench (DEST, 2007). In 2008, the Labor Party announced the ERA through the Minister for Innovation, Industry, Science and Research. This is currently being tested and it is
envisaged that in 2009, the full ERA process will be operational by 2010 (Australian Research Council, 2009f).

The ERA is a metrics-based assessment tool and when fully adopted will proceed from earlier systems for quality assurance in higher education. Given the history of quality systems and their development in Australia it is interesting to discover that quality assurance as a term in higher education only became relevant in the 1990s (Harman, 2001). As early as 1993, the Australian quality assurance program for higher education was established. The program had its critics because it was substantially different to the quality assurance programs identified by the Organisation for Economic Co-operation and Development for higher education in other countries. A novel approach was adopted and based on institutional audits of participating universities and questioned quality outcomes as well as quality assurance processes. The Australian model, ranked and published the outcomes, published individual institution annual reports and allocated funding from a special government fund on performance (Harman, 2001).

The AUQA was established in March 2000 as an independent body to the universities it serves. Unlike its earlier version, the current AUQA included state governments in the accreditation process for universities (Vidovich, 2002). State involvement is included because the Commonwealth funds the AUQA activities, together with the states and territories through the ministers for higher education. The AUQA has as its aim to promote, audit and report on quality assurance in higher education, while its mission states it has the responsibility of providing public assurance of the Quality of Australia’s Universities (Australian Universities Quality Agency, 2009a).

This is important and supports the view that quality assurance is not only political but is actively technical (Harman, 2001). Harman argues further that while evaluation aims to have technically valid assessments as an outcome, often these assessments are more about competition for scarce resources, power and dominant values and interests. Public policy emanates from political behaviour and as a result cannot be viewed without understanding the part played by the interest groups that shape it (Harman, 2001).
Economic

If we accept that quality assurance programs are politically driven and that interest groups influence their shape, how does the economic climate – both locally and internationally – also bring pressure to bear on the final framework? From a global economic perspective, Creech (1994) explained the benefits of a dedicated quality system across industries and cultures. These macroeconomic gains have at their foundation microeconomic drivers. Sinha (in Kajdan, 2007) argues that the continual goal of process improvement is for the minimisation of costs through optimisation of processes. I argue that most employees working within any of the current quality models will be familiar with the need for continuous process improvement; furthermore, that gains achieved in this way would be negated in the marketplace if the quality did not at the least remain the same. Therefore, the measurement of outcomes becomes critical to the process.

Kajdan (2007), in his paper 'Why Quality, Cost and Business Excellence are Inseparable', suggests that quality reflects minimisation of costs to the producer that will be passed to the customer, leading to the maximisation of customer satisfaction. The ability for manufacturing to reduce costs through savings such as in labour, tooling, materials and cycle time will make cost minimisation possible. However, even with cost minimisation strategies, isolating individual savings is complicated for organisations, as it is difficult to separate cost improvements from process improvement initiatives that have been applied to a process. It is also important to remember that the overall cost of quality assurance can be very expensive and economic compliance reduces overall net revenue. Effective quality measures, on the other hand, will reduce the cost of compliance because when quality standards are raised the need for testing and inspection is reduced. Therefore, organisations must be able to clearly gauge gains made from each change to processes. To achieve this accurately, he created the Single Operation Cost Optimisation (SOCO) Algorithm, see the next page (Kajdan, 2007).
COQi = IC – RC
COQ = ∑ COQi
   i
MinCOQ = ∑ COQi
   i

Figure 3. The single operation cost optimisation (SOCO) algorithm (Kajdan, 2007).

The algorithm (see Figure 3) has eight parts and they are: determine a process map (PM) that is as detailed as possible with all value adding and non-value adding activities clearly defined; determine the value stream process look at repetitive actions or non-value adding activities and through continuous process improvement reduce these over time; determine ideal (i.e. minimal) cost (IC) use time studies to measure each activity that contributes to the operation; include the cost of labour and materials; establish the actual time for a process as being when all machines, labour, materials and information is complete and then adopt this as a benchmark to work towards; track real cost (RC) for every operation a statistical mean usually available via the finance team; calculate cost of quality (COQ) the difference between real and ideal costs, where (i) is the number of an activity in the process and the cost of quality includes all non-value-added activities; minimise COQi, examine time cycles, time frames, materials and wastage, etc.; Calculate total cost of quality (COQ) for the system as the sum of elementary COQi; Minimise COQ, allowing for optimisation of the entire process as a result of improving on each part through the accurate identification of each component in the process (Kajdan, 2007).

I argue that achieving cost optimisation is economically sound and in the elimination of wastage, meets the economic principle of an enhanced sharing of scarce resources. Reduced costs also increase an organisation’s return on investment and should result in shareholder confidence and the flow-on of an increased share price. Public entities and not-for-profit organisations will have the ability to invest a higher percentage of revenue in new projects, contributing to the flow-on effect for adding to public good.
Technology

The advances resulting from greater economic understanding of the issues involved in quality assurance have been positively impacted upon by the ability for technology to deliver timely results of statistical analysis. Statistical process control procedures have been established to enable the monitoring of process behaviour and outcomes throughout the quality assurance time line.

Figure 4: Control chart

Control charts seek to differentiate between common cause variation and special cause variation. Common cause variation is accepted as being typical because it is deemed intrinsic to the particular process under review. Special cause variation is described as, special, unexpected, outside the usual and giving evidence that the process under review is no longer within statistical control (American Society for Quality, 2008). Control charts can be used in all situations where data can be collected over time and
are useful in measuring the outcome of a process. For example, a university may choose to measure the time their researchers take to gain ethical approval for their projects. Provided these are a number of similar situations, typically in excess of sixteen, with recorded starting and completion times, this data could be measured and reflect the effectiveness or quality of the process being measured. Variations could then be examined to understand where a result varied from the norm. This does not necessarily mean that the variation is a negative result, but perhaps a discrepancy.

Once a pool of knowledge is collected, then it can be compared with the outcomes of other universities and other similar processes in the industry to benchmark for best practice. Customer satisfaction has been highlighted as the best measure of a robust quality assurance program. Therefore, the participants for the above data collection must also be canvassed to gain qualitative data with regard to the process.

A resurgence of popularity as a statistical reporting mechanism has seen the control chart as an integral tool of many quality programs, including Six Sigma and the BEF (American Society for Quality, 2008; SAI Global, 2007). The control chart adopts several different guises but is fundamentally about recording operational outcomes and highlighting the opportunity for process improvement when warranted. For people who are unaccustomed to reading a scatter diagram, processes that lead to a cumulative sum (CUSUM), exponentially weighted moving average (EWMA) not to mention engineering process control (EPC) a tool that evolved out of statistical process control can be daunting. While often bewildering to the novice, information technology provides another tool for the purposes of quality assurance. As with most things technical, the business of quality assurance has supported statistical and reporting disciplines delivered via information technology to operate in tandem and enable informed decisions to be made with regard to achieving best practice.

Besterfield (2009) asserts that the current interdependence of quality management practices and information technology will continue into the near future. This, I argue, is because to be successful, organisations must convert information into knowledge and have now become reliant on statistical management for processing and assessment of data. Therefore, the need for the information technology teams within organisations to meet and maintain these needs via an electronic medium is essential. Efficient management of organisational computer systems will enable multiple users in many
geographical locations to simultaneously access the same data and to make informed organisational decisions.

Summary

It is clear that quality has had progressed across time and a number of different continents, impacting upon institutional and organisational management practices as compliance outcomes. It is also apparent that quality as a quantifiable concept itself persists in being difficult to explain. Juran’s (1964) argument of ophelimity as an alternative to quality as a defining organisational attribute is compelling given that economic drivers shape and often limit the ability to pursue quality relentlessly.

It is important to remember that many of Creech’s (1994) arguments were written in times of economic prosperity; although the United States of America was experiencing competitive issues, employment was high and competition for work was comparatively easy. Opportunistic drivers often feed motivation: for example, if the labour market is tight then labour forces often feel they deserve other inducements to remain loyal to an employer. This will often be irrespective of their contribution. However, should fortunes reverse, employee motivation will be linked to their own tenure and social as well as personal economic security, resulting in a completely different set of motivations with regard to employee satisfaction.

It is also interesting that quality management as a system has taken on a reified aspect, a life of its own that then is perceived as concrete by those players active in its progress, support and maintenance. Even so, TQM is not without its critics. Kajdan argues that organisations struggle with TQM and raises questions with regard to its ability to widely benefit organisations. Thus the actual manifestation of quality assurance as a framework is important for this discussion. Given the evolution of quality assurance and its political, economic and technological drivers, it becomes essential to understand those frameworks that are currently in place within higher education and those popular with organisational management.

This will give a wider view of the quality community in which higher education and research institutes function. These frameworks will be discussed more closely in
Chapter 3. As well as looking at existing frameworks, close attention will be given to the now terminated RQF and the proposed ERA. This is important, as it provides insight into what metrics-based quality frameworks will look like and what government and research institutes have agreed to. I have also given the educational models (AQTF, AUQA, ERA and RQF) close attention because I would argue that this would be the likely process followed by the government when completing the ERA for research in Australia. At this time, there is nothing to indicate that the outcome from the proposed ERA will be significantly different.
Chapter Three: Framing Quality

In the 70’s I reacted against design methods. I dislike the machine language, the behaviourism, the continual attempt to fix the whole of life into a logical framework (Jones, 1977, p. 50).

Introduction

In Chapter 2, I examined the evolution of quality from quality control models through to TQM and benchmarking. I also discussed the politics of quality management with regard to higher education. The theme that I plan to expand on in this chapter is the use of quality frameworks in higher education. I examine the practice of frameworking and discuss how practitioners look at this structure to give clarity to their processes and intentions.

An explanation of quality frameworks used in higher education and the overview of models pertinent to this field are important to this work, Design Quality: Evaluating Quality as a Tool and the Potential Impact upon Design Outcomes of Quality Frameworks. This is because there is a fundamental need to understand why and how the discipline that supports quality management protocols is reliant upon tools that are nested in frameworks that can be used for measuring the quality outcomes of institutional and business actions and processes. Discipline in this context means the philosophies, rules, regulations and governance that construct a field of practice. The quality systems (AQTF, AUQA, BEF and ISO) the defunct RQF and the ERA have been taken as a broad indicator of quality practice in Australia. The AQTF, AUQA and ERA are designed to influence educational outcomes.

There are three reasons for examining the RQF. Firstly, it is not anticipated that the ERA will be fully implemented until 2010. Furthermore, the RQF was the framework being developed in consultation with its end users when questionnaires were sent to design school academics. Finally, the proposal and university responses to the RQF has helped to define the parameters of quality assurance with regard to research in higher education and therefore remains relevant to this work.
In my work, I have examined other significant industry quality frameworks. The ISO, in its many iterations is a set of standards that when followed strictly becomes a quality framework. In this way it has parallels with the AUQA, which also seeks to establish standards for processes and outputs. The BEF is used as a tool in education; however, it espouses to be an excellence framework (SAI Global, 2007) and not a quality tool. It is important to note that the ERA has adopted the “excellence” label while stating that it remains a transparent quality assurance system for research that is internationally recognised.

Excellence, the BEF argues is a set of behaviours, that when embedded into an organisation, will lead to excellence of philosophy, values, behaviours, relationships and outputs (Carr, 2008). Like the ISO, it seeks to standardise work practices to achieve a higher level of result than would be otherwise attained. For this reason I have included it with the quality frameworks but acknowledge the stated differences between this body and all the other frameworks under review.

I investigate the AUQA and the ERA in detail because the AUQA quality framework is the current quality and assessment framework for universities and self-accrediting institutions and the implementation of the ERA is proposed in 2010 (Australian Universities Quality Agency, 2009a). I have also closely examined the BEF and the defunct RQF: the BEF because, like the ERA, it is an excellence quality framework and I examine the RQF because prior to the change of government, it was to be the tool for research funding for higher education, including design schools. Australian universities were preparing to adopt this quality framework prior to this change and therefore a review of the mechanisms that construct the RQF provides historical continuity to the evolution of quality assurance programs for Australian higher education. Like the RQF, the ERA is a metrics-based framework; it is a framework evolved through consultation with research institutes (Australian Research Council, 2008b, 2008c). This investment in time and resources is now a part of the consciousness that constructs the quality assurance function for research undertakings in universities that seek funding. Implementation by higher education in the ERA will benefit from the legacy of the RQF, a legacy that will be carried across into the new ERA both consciously and subconsciously.
Quality Frameworks

What is a Framework?

With a number of quality tools under review, it is important to understand what the term framework means when attached to the term “quality”.

The online Cambridge Advanced Learner’s Dictionary states that Framework is a noun that can mean:

1 [C] a supporting structure around which something can be built
2 a system of rules, ideas or beliefs that is used to plan or decide something: a legal framework for resolving disputes (Cambridge University Press, 2009, p. 1524).

The second of these descriptors is the most accurate for the quality frameworks under review. The reviewed quality and excellence frameworks provide structures for organisations to build their core business processes, beliefs and deliverables around. A framework also allows for rigidity (Inglis, 2005), which as this description suggests, is typically an expectation of repeatability and uniformity in well established processes. Frameworks also allow for processes to be established that will support them. For example, a procedure that enables continuous process improvement and provides for metrics to be in place to manage effectiveness, will measure both the effectiveness of the organisation and the framework, thus supporting future improvement of the framework.

Frameworks are not prescriptive. They do not enforce a set of rules explicitly for any organisation such as those established by Standards Australia Limited. They provide a set of rules, quality indicators and quality metrics that organisations can incorporate into their business practices, to be used as tools for the measurement and assessment of their results. This allows those organisations to then channel their processes in such a way that will accord with best practice (Inglis, 2005).

It is the search for best practice that establishes a quality framework within organisations. Why organisations are required to search for and maintain such a
framework could include: a need for funding outcomes, client or staff satisfaction or even the ability to be an employer of choice and attract resources to an organisation in the first instance. Where management teams are serious about their quality programs and incorporate them into business practices and their culture, the framework and what it represents then becomes a key player in deliverables. Consequently, staff begin to operate from a quality mindset, which leads to process improvement and will result in best practice. This quality mindset will eventually overarch every facet of the organisation, including in many cases suppliers, clients and other stakeholders.

**Australian Quality Training Framework**

The ability for a quality framework to influence all deliverables in an educational arena is evident when considering the daily processes and procedures of Technical and Further Education (TAFE) Institutes. Australia’s TAFE institutes and self-accrediting institutions rely on the AQTF for that framework. The AQTF is described as:

> The national set of standards which assures nationally consistent, high quality training and assessment services for the clients of Australia’s vocational education and training system (Australian National Training Authority, 2007, p.2).

Meeting the standards of the AQTF is essential for registered training organisations to maintain registration for the delivery of their courses and training programs via Australia’s vocational education and training system (Commonwealth of Australia, 2007). Many training organisations throughout Australia deliver their training as a result of meeting the standards as outlined by the AQTF; however, one important Australia-wide educational provider is the range of TAFE’s. TAFE colleges across Australia rely on the AQTF to remain compliant and registered. Their trainers and teaching staff are required to meet standards for personal registration and ensure vocational education and training standards are upheld. These standards are regularly audited (Commonwealth of Australia, 2007).

TAFE colleges are important for many reasons as they offer skills training not offered by universities and through their apprenticeships and traineeships ensure on-the-job training that meets with a strict set of standards and is recognised as valuable by
employer groups (Commonwealth of Australia, 2007). For this work, their importance lies in their delivery of numerous design-based courses and their linkages with universities (Swinburne University of Technology, 2009) offering advanced diplomas and pathways to degree qualifications and, as a result, their potential to produce higher education research.

The AQTF offers a framework for registered training organisations to establish policies and processes around which the metrics of the framework can be measured. These are divided into three major categories: registration standards, the responsibilities for state and territory registering bodies and excellence criteria (Commonwealth of Australia, 2007). These three categories require evidence-based responses to criteria and if deemed to meet levels of quality will ensure ongoing registration of the registered training organisation. As with all other quality assurance frameworks, the AQTF requires ongoing continuous improvement; the training and assessment of all staff with regard to quality outcomes; collection of data to improve client outcomes and positive customer satisfaction (Commonwealth of Australia, 2007).

The Australian Universities Quality Agency

The AUQA has parallels with the AQTF, as it is a holistic response to quality assurance for higher education. The AUQA has become the standard by which universities can measure themselves against their competitors with regard to compliance to established standards. It has also enabled a framework around which universities can establish their own methods for the formulation, measuring and monitoring of policies and processes. As the ERA will impact upon research and the funding of research across a number of areas, including higher education it is important to understand the framework, which is currently used by universities and how research in higher education is reviewed and monitored by that framework (Australian Research Council, 2008c).

The fundamentals of AUQA as an organisation are important to this discussion. This is because of the position they hold in relation to design school participants and the opportunities for the assurance of quality outcomes implicit in their charter. The AUQA has as its vision, the consolidation of its position as Australia’s quality assurance
reference point for higher education. The AUQA was established by the Ministerial
Council on Education, Employment, Training and Youth Affairs in 2000 (Australian
Universities Quality Agency, 2006a). A visit to the AUQA website makes their priorities
explicit as each area of priority is clearly identified in the website’s main menu. As well
as the About AUQA option, menu items are labelled Quality Audit, Quality
Enhancement, Good Practice Database AUQF (the forum site) and Advisory Services
(Australian Universities Quality Agency, 2009a). On the Australian Universities Quality
Agency website their stated mission is:

AUQA is the principal national quality assurance agency in higher education
with the responsibility of providing public assurance of the quality of
Australia’s universities and other institutions of higher education, and
assisting in enhancing the academic quality of these institutions (Australian
Universities Quality Agency, 2009b, aboutauqa/mission/).

The website and agency documents outline four main objectives to ensure the delivery
of its mission (Australian Universities Quality Agency, 2004). These include the
management of audits concerning the quality of academic performance and higher
education outcomes; audits against accreditation criteria and quality assurance
processes; publicly reporting on matters of quality assurance as ascertained by these
audits and creating quality assurance networks for cross-border efficiency and
international knowledge share on quality assurance and auditing matters (Australian

The AUQA’s values, as outlined on the website, are important both internally and
externally. They underpin the ability of the agency to meet their objectives and, in
doing so, the potential impact upon institutions affected by them. They include:
rigorous auditing, supporting institutional autonomy, flexible approach to institutional
autonomy and the attainment of a quality mindset. Additionally they suggest values of:
being as unobtrusive as is consistent with effectiveness and rigour, ensuring
cooperation and working collaboratively with accrediting agencies while as a quality
assurance agency ensuring audit outcomes. Lastly, opening all audit procedures and
quality assurance systems to public scrutiny, remaining a cost-effective agency and
publicly reporting all findings for institutions and agencies in the sector (Australian
These values are interesting in that the only significant mention of quality, as something achievable is that the AUQA recognises that quality comes from within. This means that as an agency they will not intrude on the university’s process for ensuring quality, subject to their own need for effectiveness and rigour. The AUQA does expand on the need for quality in its audit manual.

I argue that those who have worked within a quality assurance program will comprehend only too well that the devotees of these programs will actively argue their ability to provide quality. Quality agents will point to standardisation of processes, the creation of standards, monitoring and review of outcomes against these standards, action items resulting from reviews permeating the organisation with a quality mindset and the meeting of external agencies metrics to maintain accreditation, funding, status, viability or a combination of these outcomes. However, while all worthy practices, there is only a provision for audit and compliance with these standards and no measurement for increases in actual quality. The AUQA states that a standard is a specification or some other criterion that has been agreed upon and is then applied as a definition, a rule or a guideline to manage and monitor levels of performance and achievement (Australian Universities Quality Agency, 2008).

In order to understand how the AUQA works towards realising these standards within a quality framework and simultaneously meet the needs of Australian universities, an examination of the framework offered by this agency becomes critical. One way to understand a quality framework is to look at the audit requirements for measuring the effectiveness of user institutions and organisations. This is useful because (as I established earlier) a framework is executed as a tool around which institutions and organisations can adapt their policies and processes to achieve quality assurance.

As stated above, one of the AUQA’s values is transparency. Audit reports and action items, together with the universities’ progress towards meeting any shortfalls, can be viewed for most universities on the AUQA website (Australian Universities Quality Agency, 2009a). As the audit manual indicates (Australian Universities Quality Agency, 2008, p. 85), the agency commenced audits in 2001 and completed all university and self-accrediting institutions’ audits by 2007. Published in 2008, the fifth version of the
manual outlines the typical audit process of Australian regulators and includes functions such as: initiating an audit, audit parameters, audit panels, audit interviews, evidence required and presentation for and to the panel, the actual audit processes, audit reports, establishment of subsequent audits and the cost of having an audit (Australian Universities Quality Agency, 2009a).

The manual further defines the requirements of those institutes that are self-accrediting, which includes higher education providers covered under the Higher Education Support Act 2003 and those that are not self-accrediting. Covering all contingencies, including international campuses, the manual provides lengthy audit tables as appendices. Policies are outlines of minimum standards against which those to be audited will be measured, as well as a risk assessment framework and a framework for evidence and outcomes against standards. The risk assessment framework is very specific, dividing the university processes into three areas: major institutional activities, specific academic activities and indicative areas of risks. The risk assessment framework then lists the major institutional activities as: teaching and learning, research and research training, community engagement, international activities, and governance and management (Australian Universities Quality Agency, 2008).

Research and research training looks at 10 specific activities. The quality activity item 2.3 in the AUQA Audit Manual (Australian Universities Quality Agency, 2008) states that the indicative areas of risks are the degree of research skills and the degree of high-quality research resources (including fieldwork support). Also included are: process for the regular assessment of disciplines and process for the regular assessment of organisational groups’ program for examining the strengths and weaknesses of institutions. In addition to these are: managed risk programs that support innovation while capturing opportunities, a simple process to support postgraduate research application and strategic alignment evidenced by representation on research committees. Lastly, conducting internal and external peer review, benchmarking, retention strategies for students at risk and demonstrated sustainable levels of funding for the institution’s research program, together with long-term goals, is also seen as important (Australian Universities Quality Agency, 2008).
A review of the follow-up data posted on the Quality Audit section of the website (Australian Universities Quality Agency, 2009a) listed under Audits: universities, reflects that the agency does respond to these metrics. Given the agencies’ method of assessing quality assurance metrics against the above risk assessment framework, it will be interesting to see how the ERA and the AUQA unite to assure quality in higher education research. It appears that the metrics for funding will be established by the ERA and that the ability of universities to meet these metrics will be audited as a part of their accreditation program via AUQA.

To ensure that the AUQA is meeting its own rigorous standards, a number of reviews concerning its own performance have been undertaken. Two reviews that are of importance to this work are International Benchmarking of External Quality Assurance Agencies (Looking from Top to Bottom) (Carmichael, Gerkens, Moser, & McKenna, 2008) and the Review of the Australian Universities Quality Agency (Australian Universities Quality Agency, 2006a). Examining the 2006 review first, the AUQA received nine commendations, five affirmations and 17 recommendations in the final report prepared by Bateman and Giles Pty Ltd for them (Bateman, Bedgood, & Noonan, 2006). Of the recommendations, 10 would fall into the banner of agency housekeeping and professional and agency development, while seven were specifically directed at AUQA for their members. Of these, Item 13 recommends that the AUQA make the following proposal to its members. That the members consider the inclusion of two new objectives into their charter that focus on AUQA’s role of quality improvement and of AUQA’s need to form better international relationships (Bateman et al., 2006); that appropriate resources that have both the capability and capacity be allocated to enable the fulfilment of these new objectives (Bateman et al., 2006). These are two provisions that align well with the focus of the new ERA.

The benchmarking between the external quality assurance agencies was important to the AUQA in a number of areas. It gave the AUQA access to the skills and experiences of other similarly placed agencies that had in the same way been reviewed (Carmichael et al., 2008). The AUQA was most interested in a strategic review of their department, evidenced by the section of the report that questioned what the AUQA had learnt. As stated in the report, the reason for undertaking the benchmarking exercise was to
maintain significance and currency in an environment that is in constant change due to the increases of its authority over the organisations it audits (Carmichael et al., 2008).

The Business Excellence Framework

Unlike the AQTF and AUQA, the BEF does not claim to be a quality assurance framework. Organisations following the BEF are encouraged to understand the difference. One user of the BEF, the Department of Education and Children’s Services (2007), accepts this distinction stating on the quality section of their website that the BEF is a management and leadership program covering twelve quality principles that are non prescriptive. However, companies wishing to avail themselves of accreditation through the BEF face a very similar audit and review process to that outlined by the AUQA.

Developed in 1987 by a team of leadership and management professionals (SAI Global, 2007), the BEF is currently utilised by a number of sectors in Australia and has found favour with both education, as shown above, and the aged care sector to name but two. Initially established upon 12 principles, as seen in the above quote, in recent times these principles have been consolidated into eight core practices. To assist in establishing a global presence, the Australian Business Excellence Framework has been renamed the Business Excellence Framework. This has supported recent international marketing and subsequent exposure with 75 countries worldwide in 2007 having adopted frameworks based on the same or similar philosophies as those of the BEF model (SAI Global, 2007). SAI Global assures us that the Australian version of the BEF currently meets the requirements of ISO 9004:2000. This is a point I find very interesting because of one quality framework meeting the compliance standards of another. In this instance a program that SAI Global argues is not a quality framework but an excellence framework deciding to meet a prescriptive standards framework for their own quality assurance.

The BEF is closely aligned with the work of Deming (1993) who argued for management excellence to deliver a TQM system (Kanji, 2002; Walton, 1988). Deming’s TQM model has a focus on management philosophy with a strong reliance on statistical data teaching principles of statistical control to Japanese industry in the
1950s (Kanji). Deming, in the early 1950s, argued that the final arbiter of what achieved quality was a fit-for-purpose test (Kanji). The principles espoused in the BEF are the excellent pursuit and management of leadership, customers, systems thinking, people, continuous improvement, information and knowledge, corporate and social responsibility, and sustainable results (SAI Global, 2007). Organisations who adopt these principles are encouraged to map their organisational process in a relational manner as a systems view (see Figure 5).

The systems view when in place supports Deming’s (1993) excellence principles. The leadership principle encapsulates the philosophy of leading by example and adopting all of the other principles to result in behaviours that will achieve organisational excellence. It is a principle that includes not only a mutually agreed vision but also the communicative skills to devolve vision and organisational needs to the wider team. The principle of leadership seeks strategies as a way to meet the organisational vision and the ability of the leader to ensure that deployment is effective.
Customers, as a BEF principle, will look at how current market and future perceived markets would drive the organisational responses to growth and development. The principle of customers also incorporates the philosophy that the end user of a product or service that is the customer is the best judge of the usefulness and worth of product offerings. Therefore, customer and market feedback and research should be employed to drive organisational strategies.

The next principle is called Systems Thinking and is a principle of continuous improvement. The BEF system looks at all relationships, resources, policies and processes that support an organisation, together with the environment it finds itself situated in. As an expectation, the principle has the need for an organisation to clearly understand its system and what will impact upon it. This includes understanding how the future will potentially alter the system and, consequently, how to make adaptations through improvements to the system in order to ensure it is achieving desirable outcomes.

People, is the term used for another principle. It explores the ability of organisations to value and identify people’s capabilities and through utilisation of these skills improve the organisation. It also functions on the values of believing in the people of the organisation. Similar to that of the customers with products, people working with processes will know them best and as a result, they should be included in the process of improvement in order to initiate positive change. Through appropriate leadership, people of the organisation will feel satisfied and enthusiastic and have increased confidence in their ability to improve organisational outcomes.

The principle of Continuous Improvement is already defined in each other principle; however, SAI investigated the organisations’ ability to act promptly and be responsive as a result of an embedded culture of continuous improvement. This principle is underpinned with personal and organisational knowledge acquisition and dissemination. It argues that this will lead to improved efficiency and effectiveness.

Another of the principles examined is that of Information and Knowledge, which recognises that data is required to make informed decisions. The BEF consistently requests evidence to illustrate either one-off variability in the system or a trend before
making any decision. Where there is a trend, it will be assessed and strategies then employed to meet the new outcomes. Where the data indicates a one-off change to outcomes, where appropriate, this is then fixed and the existing system remains unchanged. SAI Global (2007) informs us that measurement of variation via the analysis of data should be a high priority.

Corporate and Social Responsibility as a principle examines ethical behaviour and the ability for the organisation to act in a socially and environmentally responsible way. This principle is met when all key stakeholders have judged the organisation to be a good corporate citizen. The acknowledgement of corporate and social responsibility must be widespread and include the wider community. To be effective, this principle looks to appropriate corporate governance and its impact on public image and the need for risk management and ecological and economic sustainability.

As with some of the earlier principles, the principle of Corporate and Social Responsibility then leads to the principle of Sustainable Results. This is basically the reward for achieving the previous principles. It involves balancing stakeholder needs against corporate objectives in the present and for the future, and deploying strategies to meet all needs necessary to distinguish itself in the global market place.

The eight principles underpin the seven categories of the framework, and these include: leadership, strategy and planning, information and knowledge, people, customer and market focus, process management, improvement and innovation, and success and sustainability (SAI Global, 2007). While all of these categories are important to success, the two areas of: improvement and innovation, and success and sustainability require further discussion. Described on the SAI Global website as, Process Products and Services and Business Results, these two categories specifically look at continuous process improvement and audit and compliance. The BEF boasts a non-prescriptive nature; however, the framework seeks to measure outcomes through a number of devices, including self-assessment, audit and control charts.

As an organisation, SAI Global offers a number of assisted assessment vehicles. The self-assessment options and facilitated assessment where management and cross-company employee representation is taken through facilitated assessment to identify
both qualitative and quantitative data (SAI Global, 2007). The Business Excellence Indicator, which is an online questionnaire for the self-assessment of organisational performance, targets the organisational levels of Executive, Middle Management and Staff. External assessments, including the following audits: desktop, focus group, interviews and site visits, are also an effective tool. Lastly, customised assessments, where SAI Global offers integrated assessment solutions drawn from its global experience and from targeting the areas outlined above as the seven categories, can be utilised by the organisation (SAI Global, 2007).

The reason for identifying the last two categories of Improvement and Innovation and Success and Sustainability is not to undermine the merit of the preceding ones; it is because of this research that I focus more on the ability of design as a discipline to meet these last two requirements in any quality framework and in particular, the ERA.

Value to stakeholders is an important consideration in the category of Process Management, Improvement and Innovation. There is an acceptance, in the principle of Process Management, Improvement and Innovation, that stakeholders can influence the outcomes of product improvement and, in doing so, improve their products (SAI Global, 2007). To meet the deliverables of the Process Management, Improvement and Innovation category, organisations undertaking the BEF as a tool must identify and document all policies and processes that will lead to value creating. This must be undertaken from all perspectives to be able to map and understand the benefits that the improvement delivers. Additionally, they will then be required to optimise these processes using structured methods and review them to ensure that they are adaptable and relevant for current and new organisational outcomes. Finally, the organisation will need to understand their customers and competitors and how they as an organisation perform in competition to them and in terms of meeting their expectations (SAI Global, 2007).

Core practices for meeting this category include adapting stakeholder requirements and adapting these through process design by understanding organisational capabilities and management goals, the clear articulation through tools such as deployment charts of processes and their management. Further core practices include the measurement of organisational processes to identify and manage conformance and
to identify opportunities for improvement. Consistency in identifying and championing an appropriate process improvement methodology is as vital as creating structured approaches for innovation and creativity so that customer value can be increased. The core practices of understanding the value of all employees to these processes and being prepared to take measured risks using tools such as benchmarking and networking to increase knowledge is important. The understanding that measurement, assessment and monitoring increases customer confidence as a flow-on effect and maintaining external comparison to gain a better understanding of where they sit in the market place is also important (SAI Global, 2007).

The last category in the BEF suite closely investigates how an organisation demonstrates performance and how well this can be projected in organisational thinking and planning to reflect the future. Success and Sustainability as a principle seeks evidence to support all plans and objectives through data and analysis of that data. Systems within the organisation can be identified, as can the data that demonstrates their success and areas for improvement. They will use this network of systems and data together with the processes to ensure ongoing sustainability in relation to organisational economic, social and environmental feasibility (SAI Global, 2007).

The core practices of this category are to understand the perceptions of value of stakeholder groups and the way this is measured to meet stakeholder objectives. Management reporting, including trends and target comparisons with analysis against industry and “best in class” and adopting a holistic view of the organisation across all indicators and for all stakeholders with shared organisational responsibility for outcomes (SAI Global, 2007). Keeping all decision makers fully informed and looking at cross-sectional reporting, ensuring that strategic outcomes are met through appropriate management of process improvement is also of value. Creating a culture that includes risk management through the identification and mitigation of possible risk while recognising opportunity is equally important. Lastly, maintaining stakeholder relevance by assessment of future needs and implementation in markets suitable for future development and benchmarking knowledge and technology to ensure future success is vital (SAI Global, 2007).
The International Organisation for Standardisation

The ISO has derived its name from the Greek word *isos*, meaning equal (International Organisation for Standardisation, 2008). Unlike the AQTF and AUQA that have a focus on knowledge and training and the BEF that argues for operational excellence via a network of principles and categories, fundamentally the ISO is a standards organisation currently having a portfolio of more than 16,500 international standards (International Organisation for Standardisation, 2008). On their website the ISO state that their purpose is to make possible the international synchronization and integration of unified industrial standards (2008).

The ISO was established in 1946 upon the International Federation of National Standardising Associations in New York and the United Nations Standards Coordinating Committee to assist with standardisation in manufacturing (International Organisation for Standardisation, 2008). The ISO standards now merge into management and the environment with the ISO 9001 (quality) and ISO 14001 (environmental) providing generic standards for management systems (International Organisation for Standardisation, 2008).

Standards, the ISO articulates, are important because they lead to: efficiency, work towards safety, are environmentally clean, facilitate fair trade, lay the legislative foundations for OH&S practices, share information and technology, disseminate innovation, and assist with consumer safeguards and problem-solving (International Organisation for Standardisation, 2008).

The ISO organisation argues that ISO standards provide benefits to a wide cross-section of the community, including businesses, innovators, customers, governments, trade officials, developing countries and consumers (International Organisation for Standardisation, 2008). They further state that all of humanity is impacted upon because of the ISO standards because, they say, quality of life is regarded as being higher due to safer transport, tools and machinery that result from ISO standards. The ISO add to this all-encompassing argument by stating that the planet is richer because of the international standards of water, soil, gas and radiation emissions that they
govern, which in turn assist in the preservation of the environment (International Organisation for Standardisation, 2008).

Bold statements indeed, however, the ISO standards group boasted 3,041 technical bodies in 2006, which included 193 ISO technical committees. They had 147 members in 2003, which is substantial given that membership is offered to the national standards institution of a country that is deemed most representative of that country’s standardisation process and that membership is therefore limited to one member from each country (International Organisation for Standardisation, 2008).

While the ISO has different beginnings and drivers compared with the other quality systems and frameworks under review, they share one primary characteristic that is pivotal to their ongoing success: the use of assessment and measurement as tools. These are as important to the ISO suite of standards as they are to the AUQA, AQTF and BEF. The ISO’s Committee on Conformity Assessment was formed in 1970 with the specific purpose of enquiring into conformity assessment and the documentations necessary to support and promote this assessment (International Organisation for Standardisation, 2008). The Committee on Conformity Assessment has the following terms of reference: to study the ways in which management systems, processes, products and services can be assessed against the conformity guidelines for standards and of technical specifications. To prepare those standards and guidelines against any method of testing, inspection and assessment, regardless of processes, services, management systems and workplaces can be made to establish certification, accreditation and operation. The last item in the terms of reference is to accept and to promote appropriate international standards necessary for testing and assessment of these standards (International Organisation for Standardisation, 2008).

The ISO say that its standards are democratic in that each member can participate in the development of their country’s standards. The ISO group state that its standards are voluntary and not legislated as enforceable; however, they suggest that countries may wish to adopt ISO standards particularly those dealing with health, safety or the environment by referring to them as standards in legislation. The ISO argue that these standards are written as a response to the market having an international consensus with periodic review. They summarise by arguing that the ISO standards are globally
relevant and provide a framework for globally compatible technology (International Organisation for Standardisation, 2008).

I argue that the global relevance of the ISO standards is due to their process of conformity assessment. The ISO system requires rigorous discipline in meeting the individual standards provided for and against which standards products, processes, and practices can be measured and benchmarked. Experience with and global acceptance of the ISO standards confirms that there is international consensus about these standards being best practice. Following ISO standards will therefore lead to worldwide conformity of assessment and facilitate trade; this is because when industry sectors conform to international standards, the consequence will be industry-wide standardisation and ease of operation (International Organisation for Standardisation, 2008).

The Research Quality Framework

As stated, the ERA has now replaced the proposed RQF in terms of allocation of research funding among Australian research institutes, including those of universities. However, a history of the formulation of the RQF and the process of consultation to reach agreed metrics offers insight into where we are today and the structure of the ERA.

In the Foreword to the Research quality framework: Assessing the quality and impact of research in Australia – the recommended RQF, Peacock, the Chairman of the Development Advisory Group (2006), acknowledged the document as an implementation methodology for the RQF. Peacock (Commonwealth of Australia, 2006) outlined the consultation process undertaken to arrive at this point in the development process and to build on the former work of the Expert Advisory Group. The consultation process included accessing nominated RQF contacts for feedback at individual universities and technical working groups focusing on quality metrics, research impact, information technology and exploratory modelling. This also extended to consultation with eminent groups such as the Australian Vice-Chancellor’s Committee and the Deputy/Pro Vice-Chancellor’s Research (Commonwealth of Australia, 2006).
Special mention of the UK Research Assessment Exercise (RAE) and the benefits arising from it were made; these included increased funding levels and increased international recognition as a result of the UK research. However, at that time, Peacock (Commonwealth of Australia, 2006) felt that the Australian Government had a number of initiatives to complete prior to implementation of the RQF, including trials, the development of guidelines and panels and a strong recommendation to increase the block grant budget and to recognise and reward high quality research that resulted in a high impact. Peacock concluded his Foreword by recommending that the Australian Government consider assisting with compliance costs, the funding of assessment processes and the development of RQF-related information management systems (Commonwealth of Australia, 2006).

I argue that it is important to the formulation of the RQF that a number of advisory bodies work towards establishing the framework; perhaps the most significant being the EAG, the RQF Implementation Advisory Group and the Research Quality Framework Development Advisory Group (RQFDAG) (Commonwealth of Australia, 2006). These members, in consultation with universities, other research entities, industry and the wider community formulated the recommended RQF. But what did they perceive that research encompassed?

The Organisation for Economic Co-operation and Development describe research and experimental development (R&D) as comprising work that is undertaken systematically; furthermore, it is creative and has as a goal – an increase in the stock of knowledge. The Australian Bureau of Statistics on their website state that R&D is:

- Pure basic research; strategic basic research; applied research, including new ways of achieving specific and predetermined objectives such as clinical practice; and experimental development, including creative work and performance insofar as they directly relate to original basic and applied research (Commonwealth of Australia, 2006, p.10).

The proposed RQF sought to improve the quality and impact of research through rigorous application of an accurate assessment process that focused on evidence. This
process, it was argued, would measure quality, intrinsic merit and impact for academic
and qualified end users (Commonwealth of Australia, 2006).

The RQF was to measure the creation of new knowledge by way of original research
and the creation of new concepts, methodologies and understandings through the use
of existing knowledge. It was also going to flatten out disparities caused by time lags
of research and the potential downgrading of high-impact research that has an
element of immediacy. It was also to be underpinned by four guiding principles:
transparency, acceptability, effectiveness and the ability to encourage positive
behaviour such as cross-disciplinary and international collaboration that would have
been regarded as mutually supporting and complementary (Commonwealth of
Australia, 2006).

To assist with potential knowledge measurement, four technical working groups
(Quality Metrics, Research Impact, Information Technology and Exploratory Modelling)
were established drawing on sector experts and existing RQF Development Advisory
Group panel members. The Quality Metrics working group examined consistency and
quality of quantitative measures, aggregation and differences in publication practices
across different disciplines. The Impact working group was chiefly concerned with
establishing a methodology for assessing the impact of research. After this, the sector
consultation group, RAND Europe (Commonwealth of Australia, 2006) was
commissioned to complete a critical appraisal of the findings. The Research Impact
group went on to develop a model for assessing research impact and recommended a
pre-implementation trial across selected disciplines and institutes in early 2007
(Commonwealth of Australia, 2006).

Advice on the scope of information technology required to meet the requirements of
the RQF was delivered through the Information Technology working group. The aims
of the Accessibility Framework were addressed to allow access to research data sets
and research outputs beyond the range of the RQF. The Information Technology
working group focused on efficiencies and effectiveness and suggested that data
gathering specifications be established as soon as practicable (Commonwealth of
Australia, 2006).
The Exploratory Modelling working group examined models for allocating funds under the RQF that considered the aggregation of quality and impact ratings. The Exploratory Modelling group also looked at how the responsibility for payment of research costs might be considered and how potential transition arrangements could be developed to support RQF distributions. It was anticipated that modelling would continue into 2007 (Commonwealth of Australia, 2006).

Under the direction of the minister (Commonwealth of Australia, 2006), consultation through the RQF Development Advisory Group then targeted universities establishing links with contact officers to ensure authoritative comment on behalf of 42 universities. This consultation took the form of Guiding Principles for the RQF (Commonwealth of Australia, 2006), which identified key issues raised by the universities and received a response in the form of 32 submissions and representation at a session of the RQF Development Advisory Group’s third meeting.

In 2006, the result of these committees and broader consultation was the endorsed RQF. It encompassed the revised methodology; the four-digit RFCD codes for Research Groups eligibility criteria for inclusion in a Research Group; the attribution of research outputs; institutional submissions; evidence portfolios, including quality and impact assessment; assessment panels; an RQF moderation panel; research quality and research impact, reporting, funding and suggestions for funding principles (Commonwealth of Australia, 2006).

To ensure a smooth transition into this new framework, the Minister for Education was to appoint a reference committee with external representation to provide sector support. This committee was to develop guidelines and IMS implementation of the RQF, including possible funding, moderation, determination of final ratings and evaluation of the processes and outcomes.

**Excellence in Research for Australia**

In a media release, Senator Carr stated, “The ERA will replace the now defunct Research Quality Framework with a streamlined, internationally recognised and transparent research quality assurance system” (Carr, 2008, p. 1). With the proposed
RQF, given the experience of the RAE and the New Zealand Performance Based Review Fund, it was recognised that quality assessment is costly; therefore, additional resources would be required from the Australian Government. This was to aid the sector in meeting costs of administration and compliance and to establish panels and implementation of the proposed information management system (Commonwealth of Australia, 2006). The Rudd government rejected the proposed RQF and have established the ERA in its stead.

When Senator Kim Carr announced the ERA initiative, he explained that it was being developed through the ARC and the Department of Innovation, Industry, Science and Research (Carr, 2008); that this interrelationship would use metrics and expert review to produce a transparent and workable system to enable research to be measured internationally against Australia’s peers. Senator Carr said, “The ERA model will provide hard evidence that taxpayers are getting the best bang for their buck in this critical area” (Carr, 2008, p. 1).

Which quality framework would be the most beneficial for research in higher education is not the focus of this work; however, it is essential to understand the deployment of frameworks within which the principles of design excellence will be measured. It is clear that the ARC, ERA and AUQA will all hold key positions with regard to quality research and the funding thereof. Therefore, the capacity of the ERA to clearly demonstrate their role in the higher education research quality assurance continuum is important to design school research professionals, chiefly because of the transition in process that would have needed to take place with the shelving of the RQF and the introduction of the ERA. I have accepted that the ERA is a framework unto itself, in that it meets our previously accepted criteria of providing a basis for processes to be established through which, institutions that use it, will be able to work towards meeting quality assurance standards.

In the draft ERA, submission Guidelines: Physical, Chemical and Earth Sciences (PCE) & Humanities and Creative Arts (HCA) Clusters (that is clusters one and two), a number of issues were addressed (Australian Research Council, 2009d). Given Senator Carr’s comments, the alignment with the ERA through its objectives are: to establish a framework that uses a stock take process to give all stakeholders assurance with
regard to Australia’s institutional research; to understand the focus of research across institutes; and to identify opportunities for development. It will also provide a holistic view for identifying excellence of research performance, identification of areas of research emergence and development opportunities. Lastly, it will provide an opportunity for national and international research comparison across all disciplines (Australian Research Council, 2009c).

The ERA has identified eight clusters of disciplines and through this framework, evaluations will be undertaken to meet the above objectives. Research evaluation committees will undertake the evaluations, the composition of which will include national and international experts using the following indicators: research quality, research activity and volume, recognition and research application (Australian Research Council, 2009c).

The Research Council indicates that the ERA is for evaluation of discipline-based research and as such multidisciplinary and interdisciplinary research will be disaggregated as per its discipline components (Australian Research Council, 2009c). Peer review will be minimised where this has already occurred to prevent duplication of processes. Where peer review is required, it is to be undertaken by the ARC. Statements to support the peer review process need to explain the background, the contribution, significance and evidence of excellence of the research. As explained, the four major phases of the ERA process are submission, assignment, evaluation and distribution and/or publication of outcomes (Australian Research Council, 2009c).

Using comparisons with the Organisation for Economic Co-operation and Development’s 2002 explanation, the ERA guidelines have defined research as meaning “the creation of new knowledge and, or the use of existing knowledge in a new and creative way so as to generate new concepts, methodologies and understandings” (Australian Research Council, 2009c, p. 10).

The ERA process uses the ARC as its foundation. As a key member in this research process it is important to understand the position of the ARC. Firstly, it is vital to remember that the ARC is a statutory authority within the Australian Government’s research portfolio of Innovation, Industry, Science and Research and as such,
developed the ERA together with the IISR Department. As previously stated, the ARC’s mission is to deliver policy – supported by programs that advance research and innovation in Australia and internationally with community benefits (Australian Research Council, 2009a). Established in 2001, the ARC, through the National Competitive Grants Program, fund research, broker effective partnerships and national and international networks and give primary advice to the government with regard to national research investment (Australian Research Council, 2009a).

The ARC’s 2008/09 – 2010/11 Strategic Plan outlines the guiding principles as excellence, engagement with all stakeholders, benefit to the community and accountability. These principles, when fully adopted, will lead to a research capability that is broad, accessible and of impeccable quality (Australian Research Council, 2009b).

However, what is important when examining the ERA, ARC and AUQA is that for the ERA and AUQA, their key deliverables are realised through evaluation. To be evaluated, research participants need to fulfil strict criteria, thus ensuring the requirement of compliance and its evaluation as part of the entire lifecycle of research funding. Supported by an analytical testing team, the Indicators Development Group is essential to this evaluation process. Established in 2008, the group’s mission is to evaluate, test and endorse indicators that are discipline-specific and include metrics and other quality proxies and activity (Australian Research Council, 2009e). Indicator principles include: multiple citation suppliers, accreditation of institutional outputs, managing interdisciplinary research, peer review and expert review leading to an excellence profile (Australian Research Council, 2008a). For the purpose of establishing these indicators, the ARC established two subcommittees: the creative arts sub-group and the humanities sub-group.

The Creative Arts sub-committee and its work is important to the understanding of how design will be impacted upon by the ERA. Chaired in January 2009 by Professor Sears of the University of Western Australia, the Creative Arts sub-committee has committee members from New South Wales, Victoria and Queensland. Visher, Director of Outreach Research Excellence Branch of the ARC, gave a paper ‘Creative Arts and the new ERA’ at the Australian Council of University Art & Design schools’ national
annual conference (Australian Research Council, 2008a). In this presentation, she outlined the aims and deliverables of the ERA as shown above. Specific to the purpose of ACUDS is the humanities and creative arts cluster. Challenges raised for this cluster include: relevance of standard journal rankings and analysis of citations and the identification of appropriate indicators via a creative arts sub-group (Australian Research Council, 2008a).

Further considerations for the sub-group include: the research output’s actual research component, peer review issues, and appropriate research quality proxies. Furthermore, they questioned whether the applied indicators were effective and whether there are alternative ranking possibilities other than journals and the identification of quantitative and robust measurements for esteem (Australian Research Council, 2008a).

The last item of importance for this group is the System to Evaluate the Excellence of Research, an ARC-developed information technology system. This will be used for qualitative data analysis and storage of journal rankings and citation material for analysis. Institutes will be allowed time to upload the submission data relevant for their nominated cluster onto the System to Evaluate the Excellence of Research, which will be verified and validated for data alignment with its technical specifications and the submission guidelines. Once accepted, the ARC will attach bibliometric data to the submission; therefore, the evaluation and distribution and/or publication of outcomes as part of the process can be realised (Australian Research Council, 2009c).

The question remains, how does the ERA address some of the issues negotiated over time between research institutes and the Howard Government when formulating the provisions of the RQF? A superficial glance at both would indicate that there are many similarities and that despite rhetoric; the aims of both frameworks are similar. That is to identify and demonstrate to the public the worth of government investment in research and to establish Australia as an equal competitor in international research. Therefore, both governments basically desire to be able to contribute to international forums and say Australia is a worthy competitor when referring to research and establish a case for justifying this need to the Australian public.
The proponents of the ERA did have a period of consultation with research institutes. In the consultation paper 'Excellence in Research for Australia (ERA) Initiative' in June 2008 submissions in response to the this consultation paper were sought across research institutes (Australian Research Council, 2008c). Areas addressed included: units of evaluation, interdisciplinary and cross-institutional matters, indicators of quality, research data and data suppliers, submission, evaluation, reporting and the consultation plan (Australian Research Council, 2008c).

The consultation plan provides an indication of the federal Labor Government’s enthusiasm about implementation within a tight time frame. May 2008 experienced the initial ERA consultation paper’s release; in June 2008 the ARC sought comment on ranked outlets’ lists; while in July of the same year, the Indicators Development Group and consultation for Clusters One and Two commenced. In August 2008, comment on submission guidelines was requested and in September, Cluster One consultation concluded and by October, the consultation for Cluster Two was completed (Australian Research Council, 2008c). This process resulted in the Draft ERA Submission Guidelines of January 2009.
Implications of a quality framework

Factors when Considering Compliance

This work seeks to understand the principles of design across different design schools from within a quality framework. While the ERA is recent and untested, difficulties for institutes remain in attempts to measure the impact of research, early career researchers, return to work researchers and the ability to compare theoretical and technical offerings. These are issues that will be reviewed, reworked and integrated into the ERA over time and while the impact of this measurement system will not be fully understood until after the first round of assessment is analysed, the effect on universities is apparent.

Universities will have to ensure that all possible contingencies are accounted for. Risk mitigation policies will need to overarch university policies and internal auditing practices that underpin ERA directives. Therefore, all existing practices will be tested against the ERA model, the ARC requirements and the AUQA guidelines, and be altered to meet the new requirements at a minimum of cost and effort to realise positive benefits from a flow-on of funds. When looking at internal policies and audit processes, universities will also have to understand the objectives and policies of the Indicators Development Group the ERA, ARC and AUQA and their auditors. The AUQA clearly states that its first responsibility is to determine policies consistent with the constitution, resulting in their implementation and then monitoring them (AUQA, 2006). The monitoring process will mean that universities have to meet these policies to remain compliant. These policies will govern the research deliverables of the universities; therefore, notwithstanding the ERA’s rhetoric, advisory groups and moderators, it is the AUQA who, as the designated auditors for higher education research, will have the final voice regarding ongoing research funding.

As outlined in the Draft ERA Submission Guidelines, the ERA process has the potential to present a number of problems of compliance. They include the ability to measure, the equity of measurement, the ownership and portability of research, the ownership and income arising from that research, research groups, outputs, ability to publish, government policy, the ability to fund, risk management and the auditing process. The
policies attached to the compliance and their monitoring is the responsibility of the AUQA, which leaves the potential for cross-departmental problems with the ARC.

Compliance with a quality framework seeks to enable universities to improve their position internationally, academically and publicly. As we are told, the focus of compliance is on the public funding of universities rather than on publicly funded research (Commonwealth of Australia, 2005). This would mean that the impact on universities as deliverers of publicly funded research by the ERA would be extensive.

Meeting the requirements of a quality framework offers a complex set of issues that will require universities to question their product mix, i.e. faculties and courses on offer, and evaluate their core deliverables from within an increasing set of constraints and narrowing focus. This is because scarcity of resources especially knowledge, the keepers of that knowledge, the ability to create impact with it, funds and government funding could result in unnecessary and disruptive shifts within the academic community as a result of the struggle for those scarce resources. These shifts in the academic community will also be ensured given the ERA’s clearly articulated hub-and-spoke model that it hopes will create centres of research excellence in specific fields (Carr, 2008).

The key deliverable of the ERA is quality, articulated as excellence and pivotal to successful research as understood through the ERA. The idea that corporate or institution rhetoric and extolling quality will result in the delivery of it or that quality of higher education research offerings can be assured through a quality framework is yet to be proven. The rebranding of a quality framework as excellence as exemplified by the BEF model still requires compliance and consistent processes to meet quality metrics. Again the question has to be, does this actually increase the quality of the end product or does it merely ensure a recognisably consistent process for managing research from within?
Quality

Quality and what it means and how it can be measured is dependent on its own set of variables as discussed above. JCU cites the British Standards definition of “quality” on the university’s website as, “The totality of features of a product or service that bear on its ability to satisfy a given need” (2003, policy/allitoz/).

Are all universities satisfied with this definition? Or do they refer to the ideas already discussed with regard to quality within a TQM system of customer expectations, cost minimisation and meeting a defined set of standards?

The ARC aims to promote Australia’s research excellence and to be internationally competitive while benefiting the community (Australian Research Council, 2004). The aims of the ERA are to have internationally assessed and future driven research that demonstrates public good (Australian Research Council, 2005a, 2005b). Both the aims of the ERA and the ARC are similar and support a quality outcome. The outcome is for research to be accessible, impact globally and nationally and for the degree of impact to be assessed, measured and rewarded in line with government priorities (Australian Research Council, 2005b; Australian Universities Quality Agency, 2006b; Group of Eight, 2005).

If, in part, allocating or assisting the ARC to allocate research funding defines the ERA, then the nature of the ranking system is extremely important. The proposal for Centres of excellence will mean that universities will vie for funding in those areas in which they are currently established to increase their return on investment. The very competitive aspect of this process will ensure that universities will spend an increasing percentage of their potential income or that already earned on seeking to acquire these research funds. The process will be cyclical. For example, University A will present a process to ensure the best possible funding from research; therefore, the assessment and allocation of funds will occur. University A will receive X amount; consequently, University B will invest in more infrastructure in an attempt to attract the same funding as University A. Money may be spent on areas such as a new database management system or on the hiring of audit and compliance specialists to ensure a better outcome in the next review. If University B is successful, University A’s allocation
of the total pool will slump as a result of University B’s investment in infrastructure. University A will then be forced to exceed the deliverables of University B to maintain its previous revenue position, capture funds forgone and enable access to the flow-on benefits derived from the status that results from the ranking.

Regardless of the approach taken by the university, these competitive manoeuvres will not actually improve quality. Valuable research dollars will be spent on administration and infrastructure. I will also argue, in Chapter 7, that if the ERA funding model follows the aged care model, funding will remain constant at no lower that the previously held level by those agencies already receiving funds. Neither of these outcomes is positive for design research.

**Scarce Resources**

The scarcity of funding dollars has other parallels for institutes. How universities will maintain or improve their present position will depend on their ability to attract and retain researchers who have a body of knowledge that meets time lines and cluster specification the individual universities are pursuing. Poaching would be an inevitable outcome of shortfalls in research ability. An alternative model could include partnering and alliance within research parameters. It wouldn’t be difficult to establish a memorandum of understanding for this with universities combining forces to ensure the maintenance of cash flow and intellectual property.

Publishing space will also prove to be an extremely scarce resource. Strategies to gain access to those publications nominated through the ERA both locally and internationally will become increasingly costly for most universities. Early career researchers will often require the support of promotion and marketing until they establish a reputation that will assist with this process or they will be forced to attempt publication in only the lower-ranked journals (Mercieca & Macauley, 2008). Reputation, I argue, is in itself a scarce resource as how many international experts can exist? With the ERA firmly stating a requirement of international impact, as a means to enhance academic reputation the lobbying and marketing of researchers for pre-publication reviews is likely to become another aspect of universities’ ERA management.
Therefore, the ERA’s ability to positively impact on the total research pool will be reliant on the extent to which Australian universities adopt research models that consistently align with the cluster and metrics system. As this model is a work in progress as yet, it will also require an ongoing investment in compliance, as this aspect will be expensive. Most universities will have quality assurance systems aligned with the AUQA currently in place; therefore, they will have to be modified to meet the new ERA objectives. When adding to this the cost of competition for scarce resources, together with those associated with marketing and lobbying, the flow of income would have to be significant to underwrite university investment in the quality research outcomes.

Successful universities will be those that are proactive about clearly defining research areas, keeping their focus narrow and managing resources to meet the deliverables required. They will have appropriate policies in place, have disciplined internal auditors and have strong lobbying powers and exceptional marketing teams. Research will be the by-product that must demonstrate international standing, quality and public good.

**Public Good**

Having identified what quality means, the notion of public good becomes essential to the debate. When talking about the RQF, Marginson (2006) questioned how the RQF might put the interests of the public back into publicly funded research. This question is equally relevant to the ERA and critical to meeting core objectives given the undertaking of Senator Carr. Public good can be described as the flow-on benefits to society deriving from public spending. J. M. Buchanan (1999) reminds us that it is an economic argument and one resulting from the observation that people demand non-market goods and services through political institutions. While this may be the case in a number of instances such as safety from external threat, clean water and fresh air, education and research is also demanded of and supplied by market players. Those who can buy these items are those who are able and prepared to pay the purchase price. So, what must government funded research supply in contrast to other commodities? Paul Samuelson (in Marginson, 2006) assists us to understand the difference by reminding us that public goods are goods and services that do not compete and are available to all in the public domain. This means that public goods
can be consumed without depletion of stock and are goods where the benefits will not confer; only to an individual but may be available to all (Marginson, 2006).

Therefore, for the criteria of public good to be met by the ERA, any member or members of the public must be able to derive benefit from the research without this reducing the ability for another member of the public to also be able to derive a similar benefit. Alternatively, they could also be able to gain benefit through an increase to the whole of public good by the product of research without having to actually seek it. This idea becomes even more complex when considering the argument of Kezar, Chambers, Burkhardt, and Associates (2005), who argue that this definition of public good is narrow. They imply that the definition should be much broader and must include the benefits received when professionals and students meet civic and social needs after consumption of private education (Kezar et al., 2005). But does this meet Samuelson’s holistic definition of public goods? If so, may this argument be equally applied to the consumption of private research grants?

What then of current research? We are looking at an impact of the ERA and its deliverables from a government’s perspective. But is there already a flow-on to public good? Marginson asserts that knowledge can only be a provisional private good that once made public, it is unable to be contained (Marginson, 2006). If Kezar et al. (2005) and Marginson are correct, is the request by Senator Carr (2008) a furphy aimed at charming the public and creating acquiescence within the research world by stacking the arguments for needing an ERA in the first place?

**International Factors**

In 2006 in the United States of America, the Education Secretary Margaret Spellings was seeking accountability in higher education. She was of the opinion that given the education budget there was a cavalier approach to quality in higher education and called on university presidents to advise the public on the good to the community – particularly as it is publicly funded and a very important consumer good (Anyaso, 2006). This account of public good highlights the actual purchase and ownership aspect of public good. The government collects funds from the public, which is used in part to fund research; because the public pays for the research, they own it and must
receive access to it, hopefully deriving some benefit. What is its value and are we the consumer obtaining value for our money?

A powerful question and one that returns to the need for rigorous assessment within the ERA to marginalise and then support the worthy and in doing so, purport to validate value for research dollars spent. The ability to assess what is valuable to a society is typically driven by market forces. The measure of the value of a good is how ferociously it is demanded in combination with how scarcely it is supplied or how abundant it is. Buying decisions for research are made, not on the outcomes of the research, but the perceived outcomes. This perception is constructed in a number of ways that might include: the reputation of the researcher, the reputation of the supervisor and the reputation of the institution or institutes that they are attached to. As Garcia (2005) explains, the quality of research is used when differentiating the reputations of academic and scientific institutions. In addition, the culture of the research team and the political climate at the time of the research as examples are all-important (Garcia, 2005). However, these amount to perceptions based on judgements that, at best, are measured or quantified against other researchers vying for the right to complete the research. It is a process that, if formalised, is at a local rather than a commonwealth level. The ERA seeks to address this.

It is therefore of interest to understand what has influenced Australian quality research frameworks. The UK Government sponsored RAE and closer to home, the New Zealand Performance Based Review Fund have both influenced the current Australian model. Academics issue a varied reaction to both of these frameworks. The RAE has suffered from a number of problems and is scheduled to be made redundant in favour of a metrics-based system after the 2008 RAE is completed. The Performance Based Review Fund is not without its own number of concerns. Of special interest is the cost benefit ratio with many universities spending more on the exercise than what they receive in funding (Shewan & Coats, 2006).

Subsequently, why adopt a potentially problematic means for distributing research dollars? Is accountability such a strong driver and if so, is the ERA the best possible model for achieving this? What are the benchmarks?
The UK’s RAE was arguably the greatest influence on Australia’s RQF and its influence can be seen on the ERA. The RAE has had two releases: it was introduced in 1986 and the second edition was presented in 1992. As an outcome it has achieved the concentration of available research funding into fewer places, an increase in global impact of UK research and an increase in international quality (Shewan & Coats, 2006).

However, the RAE is costly with an estimated £27–£37 million spent in 1996. It is argued that the research groupings have forced researchers to align themselves within the RAE parameters. It has also downgraded teaching and there is evidence that quality gains may be more about academic juggling than actual increases in international standing. There is a focus on short-term research; as a result long-term research, especially clinical research, is disadvantaged given the RAE’s reliance on publications in high-impact-factor journals. This also encourages universities to favour academic staff that are capable of short-term productivity over those whose work requires a long-term investment, particularly where it is greater than the assessment period. Lastly, due to the concentration of research funding under the RAE, those vying for research dollars have now aggregated within the same research scale and Shewan and Coats (2006) argue that the scale now appears to lack discriminatory power. This of course is the sole reason for establishing a scale and should result in supportable fund allocation decisions.

Issues with managing the RAE in its present form are the reason that a third review resulting in significant change has been undertaken. This review of the RAE has meant that all research will be viewed from the perspective of activity, quality and profile for the 2008 round. A five-point grading system will be adopted to demonstrate variances between categories from unclassified to four stars. While this remains untried, the research community, according to Shewan and Coats (2006), are disappointed and incredulous due to the funding council’s reluctance to report on how funding outcomes will be assigned to each grade. Equally disturbing is the practice in some UK universities of shedding less active research staff and replacing teaching staff with star researchers (Shewan & Coats, 2006). This will not only impact on teaching but merely redistributes research resources rather than increasing or improving the quality of the research itself.
The inability of the funding council for the RAE to establish how funding will be apportioned to grading levels for the 2008 assessment (Shewan & Coats, 2006) is symptomatic of the funding crisis that the ERA will potentially face. The ERA like the RAE will have a budget to meet. This will be a fixed sum of monies that will be allocated across the research teams, irrespective of how many meet each level of the new five-star grading system. It is reasonable to suppose that monies to be allocated to each grade will be done back to front. Therefore, the greater the number of teams that reach the levels that will attract funding, the smaller the amount of funds that will be allocated per team. In effect, if quality of research is increased and the funds available are not, the competition for these resources will mean that all players who meet all the provisions and expectations of the ERA could potentially be financially disadvantaged. Alternatively, metrics will become more difficult to attain in an attempt to allocate monies to the deserving. Therefore, the standards will be raised with regard to gaining funding at the same rate as quality is achieved due to the scarcity of funding dollars.

This phenomenon has already been experienced in the UK. The inability to utilise a simple system for distribution of research funding in the UK has led to the Chancellor’s declaration, during the delivery of the 2006 Budget, that the 2008 RAE would be the last and a team would be established to construct a metrics-based formula to solve the distribution issues (Shewan & Coats, 2006).

The NZ Performance Based Review Fund is substantially modelled on the RAE. Just as the appointment of Professor Roberts of the UK to the chair of the Expert Advisory Group ensured a close flow of ideas from the RAE to the now defunct RQF, the appointment of Professor Callaghan Chair of Moderation Panel NZ Performance Based Review Fund as an active member of the same Expert Advisory Group panel guaranteed input and feedback on the effects of the RAE as a model for a quality framework and possible alternative modelling. This is because the NZ Performance Based Review Fund has notable differences to the RAE: perhaps the most significant being the unit of assessment. Like the RAE, it has as its base a combination of peer review and performance indicators; however, the unit of assessment is the individual researcher and not a team (Shewan & Coats, 2006).
The NZ Performance Based Review Fund has the core assessment components of the quality of academics’ research outputs, research degree completions and external research income with a weighting of 60/25/15 respectively despite there being no immediate link between funding and the quality of research produced (Shewan & Coats, 2006). As with the RAE, the value of the NZ Performance Based Review Fund as a funding model has been questioned. The degrading of teaching, the reduction in academic autonomy, costs, the disincentive for collaboration and as with the RAE, the problems stemming from applied research meant it has been placed under increasing scrutiny by NZ academics (Shewan & Coats, 2006).

When reviewing other global trends in assessing quality and the impact of research, it is interesting to establish similar drivers of accountability and the need to allocate scarce research dollars in a way that is deemed to be politically impartial. So why is there this ongoing trend towards quality? Was quality not always a required deliverable of academic research? In 2006, the Vice Chancellors of the Group of Eight universities argued quite persuasively that appropriate processes were already in place for assessing the outcomes of national research that could have been modified at very little cost to be a usable model for distributing funds to the universities (Group of Eight, 2005; Shewan & Coats, 2006). This being the case, is the ERA merely another name for regulation and compliance? The relationship between quality, quality assurance and audit and compliance becomes clearer when researching the current assessment agencies for higher education in Australia.

**Australian Factors**

An overview of the AQTF and the AUQA has been given above. However, when considering compliance, it is important to remember that both of these agencies seek to increase quality through observance of key criteria by institutes and persons when producing work for assessment. They do so blatantly. In a briefing about AUQA in December 2004, the first point made was that AUQA promotes audits and provides quality assurance reports for higher education in Australia and that it does so independently as a national agency (Australian Universities Quality Agency, 2004). They provide public reports on the processes and procedures of Australian universities, other self-accrediting institutions and state and territory higher education accreditation
bodies and how these impact upon the quality of programs (Australian Universities Quality Agency, 2004).

A review of AUQA’s charter depicts that they will assess every aspect of a university that is deemed to impact upon academic outcomes. This will include: leadership and planning, teaching and learning, research, consultancies, community services, internationalisation, understanding students and stakeholders, staff and staff support, academic support, administrative support and facilities, and resources (Australian Universities Quality Agency, 2004).

While they propose to be rigorous in reviewing academic outcomes, how does this translate into quality assurance? In their audit scope, AUQA will expand upon how this will happen. The need to pay attention to the effectiveness of performance monitoring against institutional plans and monitoring of courses, research activities and outputs and systematic internally initiated (self or internal audit) of departments, as well as programs and themes will be discussed as requirements (Australian Universities Quality Agency, 2004). There is also the stated intention that organisations seeking funding must be able to demonstrate that a viable business plan with a full strengths, weaknesses, opportunities and threats analysis is in place with evidence that the objectives of this plan are being met (Australian Universities Quality Agency, 2004).

Still, the ability to increase quality is elusive. The AUQA document explains how a higher education body will be assessed against its own deliverables to ensure that these are monitored and met in a structured way. It is therefore conceivable that provided external stakeholders are reasonably satisfied with the outcomes of the research or education offered at a given institution or university, then that provider could be compliant in the quality assurance process without effectively increasing its quality. Technically, the level of quality of education and research could actually diminish and still remain compliant. Quality would be assured at the level of the institution’s self-identified deliverables.

The question remains whether the ERA will address these issues. Will the need to compete with other higher education research providers nationally and internationally increase the quality of the research pool or will there be fudging to ensure that
academics are aligned in such a way to ensure the best international representation without increasing actual quality as Shewan and Coats (2006) have suggested has occurred in the RAE?

Whether complying or fudging, meeting the provisions of the ERA will be achieved at a significant cost to Australian universities and research councils. The Group of Eight have estimated that the cost per cycle of implementation of the RQF would have been in the vicinity of $50m (Group of Eight, 2005). There is nothing to suggest that the implementation of the ERA will be any more economical.

So why do universities and research institutes pursue the requirements of the ERA? Why don’t universities decide to concentrate on curriculum and teaching excellence and leave the research dollars for those few who have the capacity to fund the cost of implementation and compliance? The answer, it is argued, is simple (Group of Eight, 2003). Australian universities often rely on international students and the export of their knowledge product to continue operating. International students view international ranking charts to judge how well a prospective university meets their own requirements of study, security, affordability and employment or status enhancement. These charts are compiled with a heavy weighting on research. Therefore, to remain viable, universities need to demonstrate an ability to maintain an outstanding research presence if they wish to supply products to international students in an international or local context. Irrespective of an individual university’s need for international students, the Group of Eight believes that teaching and research are interrelated. They summarise the relationship by claiming that the health of teaching and learning in Australia’s universities cannot be adequately addressed in isolation from their research capabilities (Group of Eight, 2003).

Also, of significant importance to each university is how a number of scarce resources will be allocated. It would be naive to imagine that if all universities improved their level of excellence and the impact of their research that they would all receive a greater research investment. The research investment dollars to be allocated will be fiercely competed for and this competition will be heightened by the constraints of compliance. Coupled with this need for research investment dollars, is the need for
many universities to compete for research dollars specifically targeting capital expenditure (Group of Eight, 2005).

There are obstacles impinging on the success of all higher education to achieve optimal funding outcomes. This is the very nature of the ERA and its research coverage. For example, medical research quite separate to higher education research will also be vying for their share of the federally funded research pool, so too, other research groups applying for this funding to meet their research objectives. Individually, they may be strong like the Walter and Eliza Hall Institution of Medical Research or they may have a low profile and thus appear weak.

The drive to attract funding to mutually agreed areas of interest would bring about the development of interest groups who will then become politically active as a larger body than they were as individual entities. These pressure groups will then impact upon the research funds pool through carefully crafted marketing and political lobbying. In higher education, one such group already in existence and now active in negotiations with the establishment of the ERA is the Group of Eight. Such groups within the higher education arena have the potential to damage other research groups and by lessening competition in their research classifications, reduce the potential for increases to quality. The worst possible outcome for higher education occurs if this activity is to achieve nothing. The cost of lobbying and the time to address mutually acceptable research objectives will not only erode the benefits of funds received, but will also divert scholarship from specific research projects.

Summary

In this chapter, I have discussed quality frameworks and the implications of these frameworks on higher education research. I have also identified the attributes of several current quality frameworks in Australia. The ERA, AUQA and their relationship with the ARC and research in higher education have been outlined. The AQTF was presented as yet one more quality framework for higher education and the BEF and ISO products were overviewed given their significantly contrasting drivers. The BEF seeks to demonstrate that the pursuit of excellence in itself will realise quality
outcomes and ISO as a standards framework is reliant on metrics and quantitative data to enable standardisation and thereby fulfil its aims.

This research seeks to demonstrate among other things that quality systems, no matter how prescribed or embedded in philosophical frameworks, are fundamentally established for measurement. Harvey (2003) reminds us that quality needs to be an embedded process, not an event and if quality is a mere matter of compliance to external requirements, the lasting benefits will not be maximised. The AUQA, ERA and ISO frameworks are quite open about their audit requirements. The AUQA is an external body with very definite needs for compliance; these are largely realised through audits. The BEF on the other hand, repeatedly states that it is not a quality management tool but an excellence program that seeks to change business practices through changes in behaviour. Yet, ultimately these changes are assessed and/or statistically recorded on control charts to demonstrate improvement of management practices and organisational processes. As a framework, it relies on quantitative as well as qualitative data for outcomes and analysis of these outcomes against benchmarks. The BEF then ranks organisations against metrics to allow organisations to list themselves as accredited at the specific levels of bronze, silver or gold.

Fundamental to these frameworks is that they supply the end user with tools that provide the measurement vehicles aimed at demonstrating how well a system operates. These can then be measured against similar systems in a competitive environment either from within an organisation or against sector deliverables or international competitors.

Where the frameworks exert power is when compliance is mandatory to meet a requirement; in the case of higher education research, government funding and ultimately institution credibility and viability is that requirement. In Chapter 4, I have narrowed the focus on quality frameworks to identify what the drivers are. The BEF uses a systems view to show organisational structure, which includes an expansive view of all stakeholders. This is a method of understanding an organisation that is reflected in different forms across other frameworks. These compartmentalise aspects of organisational relationships to understand better the interrelatedness between those
compartments: for example, how does employee satisfaction impact upon client satisfaction?

In Chapter 4, I will look at the notion of gatekeepers as drivers of control and how with most quality frameworks there exists both internal and external gatekeepers who can exert a great deal of power to enforce compliance. I will examine some of the strategies to work harmoniously within the constraints of a quality framework and lastly, examine how the universities are responding to AUQA, the ARC and the ERA. This is essential to this work as it establishes the groundwork for understanding the level of quality as an organisational culture or philosophy within universities. Lastly, I seek to understand what quality drivers’ universities have in place and what alignment universities when addressing the requirements of AUQA have achieved.
Chapter Four: Quality as a tool

Designers must inquire into how to create variables, things that can be altered by design (Krippendorff, 2007, p. 74).

Introduction

In Chapter 2, I discussed the evolution of quality from its first signs of formalisation into a discipline through the guild system and its progression into the more sophisticated current practices of TQM. In Chapter 3, the different frameworks that impact upon this work were discussed; such frameworks included were the BEF because of the adoption as a framework within education and parallels with the ERA and the pursuit of excellence. The defunct RQF, the ERA, AQTF and AUQA were targeted because of their relationship with quality assurance and regulation in higher education. The link between the ERA, AUQA and the ARC was examined.

The next phase in this work is to determine how quality is used at an organisational level to gain clarity about how quality and quality frameworks are used to define organisations. Influential to this work is the understanding of organisational and stakeholders’ expectations of the tools of a TQM systems. I will look at how quality is a tool used for both customer and employee satisfaction and the process for embedding quality into employee metrics to ensure organisational objectives are met. The process of entrenching metrics of a quality framework within organisations is the very quality of quality frameworks that will lead to and support compliance across industry sectors. The circular property of process improvement will also be identified. I argue that in time, the practice will lead to all organisations that are part of a supply chain being quality assured.

As an example, I will discuss how quality has defined the aged care industry through its regulator. The aged care sector is highly regulated and is an industry that I argue has strong parallels with higher education. I will focus on the gatekeepers of organisational quality, the regulators, as well as the internal and external quality professionals. It is important here to understand the relationship between quality and regulation and the part that all professional quality officers play to ensure that they
meet compliance objectives. I will investigate how quality agents tackle risk and what benefits of funding and prestige arise from adopting the ERA. I will give clarity to how design research is measured and what the current design assessment tools are. This is important, as the ERA’s focal argument is that design can be measured across all design outcomes with equity. Lastly, using Charles Sturt University (CSU) as an example, I will examine the audit process implemented through the AUQA. This audit process is strengthened through standards of compliance, affirmation, recommendation, as well as commendations and gives insight into how a regulator can ensure consistency of outcome through the review and re-review process.

This chapter adds depth to the work because of the key deliverables of the ERA where a quality program is pivotal to meeting successful research outcomes and gaining government funded research dollars. To enable another quality framework to be easily adopted by institutes and assimilated with their existing quality programs will require intensive careful planning and management. The extolling of quality, assists with the adoption of quality practices into an organisational culture; however, the realisation of quality, especially the quality of design research will require acceptance and commitment from design school academics who have their own ideas about quality frameworks as outlined in Chapter 6.

**The Qualities of Quality**

**Quality as a Defining Agent**

This work seeks to understand Design Quality: Evaluating Quality as a Tool and the Potential Impact upon Design Outcomes of Quality Frameworks. A substantial part of this work is to understand the impact that the new ERA will have on design research and the ability for design to be measured accurately by the assessors of the ERA. This measurement needs to demonstrate that it can ensure fair comparisons, appropriate ranking and ultimately the equitable awarding of research dollars this is because design comes in many different forms.

Design research is not restricted to the written word, although this will be an important part of it. Design research will include items such as individual artefacts, exhibitions
and electronic media all varieties of products that have been designed. Given the
Australian universities’ quality measurement by AUQA and their need to compete
internationally to attract students, I was interested to reflect on how important quality
appeared to be to the potential international student for some of Australia’s renowned
universities. Taking the GO8 as a basis, I visited each website. Not one of the
universities of Western Australia, Adelaide, Melbourne, New South Wales, Sydney,
Queensland, the Australian National University or Monash University mentioned quality
on their homepage. However, placing quality assurance into the search engine in most
instances saw references to the AUQA and the outcomes of the most recent audit. For
example, the University of Adelaide stated that they were committed to the principles
of quality assurance to meet the fitness for purpose model. Quoting the AUQA audit
manual, they went on to state they "view[es] quality management as operating an
integrated system that enables an organisation to continually reflect on, and improve,
its performance" (University of Adelaide, 2009, p.6). The University of New South
Wales has courses in quality assurance and these were immediately retrieved, whereas
the universities of Sydney and Melbourne outlined their institutional quality assurance
as evidenced through teaching, benchmarking and awards (The University of
Melbourne, 2009; The University of New South Wales, 2009; The University of Sydney,
2009).

The most immediate display of a structured response to quality assurance was from
the University of Queensland (2009). The university’s site outlined their assurance and
risk management services charter saying:

> The purpose of ARMS is to help Management and Senate accomplish the
> University’s objectives by bringing a systematic, disciplined approach to
> evaluate and improve the effectiveness of control, risk management, and
> compliance processes (University of Queensland, 2009, p 1.40).

All institutes have a strict quality assurance program; they must to meet the
requirements of the AUQA. Does it define them, their actions their culture and their
processes? To meet the strict audit, assessment and measurement requirements of the
AUQA, quality assurance must assist in defining them that this point is not
acknowledged and used, as a strong marketing tool, is an aspect that is worthy of
attention.
However, whether acknowledged overtly or not, (as discussed in Chapter 2) quality is inherent to these institutes; however, what it means and how it can be measured is dependent on its own set of variables. As previously explained, JCU cites the British standards definition of quality to explain their need for and adherence to quality metrics as the foundation of their university practices (James Cook University, 2003).

When universities seek to align an institutional concept of quality with the aims of the ARC, “to advance Australia’s research excellence to be globally competitive and deliver benefits to the community,” (Australian Research Council, 2004, unpaged) the end result becomes clearer. It is for research to be accessible, impact nationally, as well as internationally and for the degree of impact to be assessed, measured and rewarded in keeping with government priorities (Australian Government, 2005; Australian Research Council, 2005a; Australian Universities Quality Agency, 2006b; Commonwealth of Australia, 2005; Group of Eight, 2005).

Given these requirements for research, it is important to understand how a quality program will help to deliver these needs, but also the impact of an educational institution adopting the program is of significance. For a quality framework to be of value within an educational institution it must be a holistic model. As we have seen in Chapter 2, the implementation of quality frameworks offer institutes a model around which all aspects of strategic and operational management can be organised. If done so effectively, this will then lead to opportunities for process improvement, which in turn will equate to increased quality of outcome. Therefore, quality drivers will be embedded within the deliverables of business plans and operational objectives to impact upon organisational values and behaviours and to achieve goals as advanced by the people who control the processes.

The role of leadership with regard to quality cannot be overestimated. For a quality program to be effective within any organisation it has to be accepted and reflected in the philosophy of the management team from the board level or management committee descending through every level of organisational and institutional structure and acted upon with every decision taken. Initially organisations will view their mission
and value statements and ensure that these are aligned with their quality framework. Then policies and processes will be written to ensure that quality is a key driver of performance from the day-to-day deliverables of line managers through to all staff. Typically, organisations then undertake a quality training process where metrics will be established and staff will be trained so that they are able to meet these within the time and standards set by the organisation. This is where the compliance aspect of quality as an organisational tool comes into being. Processes with strict criteria are published; staff are trained to be able to understand and meet these criteria; then the results of their labour will be measured against these criteria for organisations to evaluate the performance of individuals, teams and products.

Consequently, organisations may then chose to use this data to assist in employee contracts, ongoing salary reviews, bonuses and where necessary retraining or dismissal of services. This cycle can also be applied to organisations’ suppliers with those meeting metrics being rewarded with more business and those not meeting them being either negatively impacted through fines and reduced orders or dismissed from the supplier list.

A mature organisation will have a defined policy addressing quality. It will also have strict guidelines about how these policies are to be met. This will often involve the establishment of quality teams within the operations of an organisation. Policies will include the establishing of terms of reference with their outcomes to be audited to ensure established targets are met appropriately and in a timely manner.

**Quality as a Driver of Process Improvement**

When all of the appropriate policies and procedures are in place, a sound quality program will impact upon process. The system typically follows a similar path in middle to large organisations and institutes. A quality framework is either identified by an organisation as the most appropriate for their business or chosen for them by a regulator. Australian universities have to meet the requirements of AUQA, the government’s appointed agency. They must also meet the requirements of the ARC to gain and deliver research funding; this will be expanded upon to meet the requirements of the ERA. Having to meet a designated quality framework does not
prevent organisations from simultaneously pursuing their own quality assurance program. Some service providers have to meet the requirements of a number of funding agencies to ensure compliance across all of their deliverables.

This is very evident in the aged care industry in Australia where organisations have to meet several individual state and federal government funding body requirements all via different assessment standards and audit processes. Organisations then have the choice of whether to adopt several compliance processes in tandem or to work towards the highest set of standards whether an agency requirement or a framework of their own choosing. If they select the latter, they will then need to demonstrate via self-assessment mechanisms that they are meeting or exceeding the standards of an auditing agency. Being aware of this, it is not unusual for one agency to ask the service provider if they are working to another agency’s set of standards.

Once a framework has been identified by an organisation, a quality manager is appointed as the owner of the process; this manager may have even been a member of the project team that recommended the successful framework. This role is usually a direct report to the most senior executive be it the chairman, the chief executive officer, a management committee or in some instances, the executive team. The quality manager will initiate a review mechanism for capturing all of the organisation's intellectual capital. This is classified into strictly controlled areas, such as finance, human resources, sales and production. These areas are designated as the responsibility of the most senior person in that discipline. For example, when the role of the human resources director of an organisation is second-in-line to the chief executive officer, he or she would own those human resources processes that have been developed in the organisation or those processes bought in to the organisation over which the organisation now exerts ownership privileges. The informal policies of each of these areas would be reviewed against the requirements of the quality framework and then be formalised as written or explicit policy with attached processes to meet the required deliverables. Areas where ad hoc business practices exist would be gradually formalised into this structure until at some point the entire workings of the organisation can be mapped against the quality framework. More mature organisations would then develop flow charts and process charts so that all staff are
able to access this information and retain uniformity with regard to workflows and outputs.

As well as writing policy, the quality manager would examine corporate knowledge and intellectual property over which the organisation exercises ownership. For this body of knowledge to remain of value, a system of classification into professional disciplines occurs. Areas of ownership and accountability are established, together with monitoring and maintenance programs. Simple strategies such as version control assist with the appropriate tracking, management and storage of this valuable asset. As with all other aspects of the business, policies would be established to outline this process and provide a structural support for the intention of the process. Most organisations are able to access their information technology systems to assist with these practices. All processes will need to be monitored, adapted where warranted, tested, expressed to staff and assessed and audited to ensure organisational compliance.

Once ownership of a process and the documents that support it are established, a process improvement regime can be implemented. As with all other organisational policies and processes, the process improvement documentation is also open to scrutiny, assessment and audit. To be effective, these policies and processes are usually owned by the organisation through the chief executive officer or by the quality manager. The reason that the chief executive officer is usually accountable for process improvement is that it is an overarching process. All other processes are managed through the quality manager who works in concert with the discipline process owners to satisfy the quality requirements. However, because process improvement over-arches the whole organisation and as such cannot have a process owner in a defined professional discipline, it is practical to use the role of chief executive officer for this process management.

There are two levels at which process improvement is activated, the first being organisationally. This is achieved by establishing quality networks throughout the organisation. The improvement is furthered by establishing quality as a standing agenda item for all organisational meetings, establishing an audit tool, creating an audit calendar, completing audits, providing audit reports to the organisation and to the operational and corporate teams audited. The next requirement is to identify the
ownership of each policy, creating a tracking mechanism for reporting and responding to the need for process improvement. The process is developed further by establishing and executing a policy review process, reviewing the documentation attached to the policy and reviewing the organisational outcomes affected by the policies and processes. The final component is to ensure that all staff are trained effectively in these policies and processes.

The second way that process improvement is supported is at the workplace level. This is achieved through a mapping process and a method of reporting and approaching suggestions for process improvement. Mapping for process improvement usually embodies the following steps: firstly, the identification of a workplace problem; acknowledgement of the potential for improvement and suggestions provided to a quality officer about what the possible improvement or the need for improvement is. The designated officer will then follow the tracking system to ensure positive outcomes; in doing so, he or she will ensure that the trialling or testing of the proposed improvement will take place. All necessary modifications will occur, followed by the acceptance of the appropriate new process. Then the establishment of a revised policy and new process documentation is necessary with the acknowledgement of the source of the change. Lastly, a change management process to complete this procedure is initiated.

This process becomes circular as all quality frameworks have as their core deliverable an ongoing process improvement based on the assumption that all processes can be improved upon. The BEF is one quality program that suggests, through the monitoring of control charts that when an ad hoc error exists in an otherwise effective process, no action should be taken (SAI Global, 2007). However, those who still work within the BEF framework are expected to attend regular continuous improvement meetings and demonstrate that processes are being reviewed and improved on in a continuous manner.

**Quality as a Driver of Customer Satisfaction**

The first aspect for organisations to understand with regard to customer satisfaction is to be able to accurately identify the nature of their existing and potential customers.
Universities would typically respond that the students are their primary customers; however, they have a number of other consumers. These will include the agencies that provide funding, research grants and scholarships, the source of the public monies and hence, the argument of providing public good. Universities must satisfy this entire and often complex web of customers, as do most other organisations. A quality program will impact upon customer satisfaction by identifying their needs and executing workable solutions to address them.

Understanding the shift in customer expectations with regard to quality, especially given Juran’s concept of economic satisfaction, becomes of increasing interest (American Society for Quality, 2008). This was evidenced very early in the supply process when the Industrial Revolution resulted in labour being removed from the guild system and then being incorporated into the factory system. Besterfield (2009) suggests that the factory process led to a reduction in customer expectation as a result of a reduction of cost. A result, he argued, of the fragmentation of individual worker’s skills into the individual work outputs of many workers and initial changes to process via the factory mechanism.

One wonders if this was the motivational force behind the often-expressed view that one only receives what one pays for. Regardless, it is important to identify the shift in customer expectations that resulted from the difference in processes and provided the platform whereby economic satisfaction could ensure customer satisfaction. There are several aspects that impact upon the satisfaction of customers: cost, quality, availability, abundance, familiarity, individuality, reliability and scarcity, to name but a few. Cost, as with many of the other attributes, can be a double-edged sword. There are many consumers who desire the lowest possible cost while goods and services tend to supply reliability and fitness for purpose. There is also a percentage of consumers who wish for an item to cost enough to eliminate much of the market, demonstrating that in the purchase of a good, they are part of a select few this is best represented in the purchase of luxury goods. Because of these prerequisites to customer satisfaction, a number of different processes have to be managed to meet consumer expectations via a quality management program. These may be either individual or in combination.
Firstly, the customer can perceive a potential level of quality as a result of a quality branding that they can identify with. An example of this is the diverse suite of products on offer with ISO certification and readily identifiable ISO quality approval. These standards encompass everything from greenhouse gases to healthcare on the Internet, as well as the more traditional areas of information technology solutions, engineering, textiles, mining and petroleum to name but a few (International Standards Organisation, 2007). The ISO approvals are very familiar and while ISO is a system of standardisation; it is the observance of these standards and their international compilation that the secretariat in Geneva would argue leads to quality outcomes recognised by customers across a broad spectrum of buying groups throughout the world.

This perceived quality is derived from both advice and gleaned information and also from prior experience. In Australia in the 1990s, governments often favoured organisations that could demonstrate that their products were covered by an ISO discipline and have their measures in place. In the information technology solutions industry, for example, it was difficult to win government contracts without being ISO approved. This solved two problems for the customer: they limited the number of potential tenderers, which saved time and money in the identification and choice of successful suppliers. Consumers also had confidence in the ISO system, as their own internal quality checks could be partially satisfied because of their suppliers’ ISO support. Lastly, the client’s quality outcomes were guaranteed as a result of the standardised quality audits of end products or at the project-end of service provision. These benefits allow for the savings of time and money by the consumer.

The second aspect is interrelated with the first. This is knowledge borne from experience when dealing with quality products. Once established, it is self-supporting until evidence is shown that the usual state of events has altered. The flow-on of these benefits can be clearly seen when looking at the aged care Industry in Australia. As an industry aged care in Australia is heavily regulated. The governing agency has four standards to be met with 44 outcomes. Within residential care, facility managers and their teams have to meet very strict levels of compliance to obtain accreditation and once attained they then must maintain these standards to ensure ongoing funding. Regular audits are interspersed with spot visits. Organisations must meet all of the
outcomes through demonstrated results and historical evidence. Those businesses that can demonstrate that they have a high level of quality management via recognised quality programs have a distinct advantage over those that rely on in-house quality control. The in-house system could, in fact, be better that the recognised system; however, because one is recognised and understood from the customer’s point of view, in this case the funding agency, their past experience with understood technology will mean that they will provide a distinct advantage to the supplier with recognised programs.

A third driver of customer satisfaction is the “quality guarantee”. Often linked to consumer goods, such as clothing, electrical and engineering supplies, these quality labels are usually supported with a returns policy or a limited guarantee period. In the case of electrical items, the customer may feel there is an interrelationship between the guarantee and the life expectancy of the product. However, consumers seek guarantees as a provision against faulty workmanship and will often extend the length of the warranty where possible with warranty extensions sold as “added value” for many consumer goods. This is especially relevant with electrical goods such as computer hardware, audiovisual equipment and white goods.

The only outcome that can create true customer satisfaction is a product or service that meets or exceeds its advertised or contractual obligations. That quality systems drive customer satisfaction is clear as illustrated by customers purchasing when quality indicators are evident. If the quality or potential quality of a purchase were not actually linked to these buying decisions, then these quality indicators would not be sought in the buying cycle and therefore supplier organisations would not persist with their quality programs.

**Quality as a Driver of Staff Satisfaction**

The social drivers of quality, that is those aspects that are communal and encourage groups of people with a like purpose to embrace quality to achieve mutually agreed outcomes are absolutely linked to the political, the economic and the technical drivers of an organisation. These factors impact upon client and staff satisfaction. Like the early artisans who marked their work to be able to acknowledge their level of
competence, workers today are encouraged to associate themselves with the results of their manufacturing or service provision and to advance their organisation’s stature and consequently, their own by meeting specific organisational goals. This might be reflected in providing the cheapest good on the market, the most enduring product or all of the many possibilities in between.

Typical questions on staff satisfaction questionnaires include: Are you proud to work in this organisation and would you recommend this organisation to your friends as a potential employer? Organisations ask these questions for two reasons: firstly to make the employee ask the question of themself and secondly, to gain the employee’s approval with regard to their products and the subsequent marketing, sale and support of them.

As with customer satisfaction, it is often difficult to identify the link between staff satisfaction and quality. This is because the outcomes of a quality regime within an organisation can, as with customer satisfaction, be a matter of perception rather than one of reality. This is significant for quality as a potential discipline and exists because the basic tool of all quality systems it the quality process. These quality processes will contribute structure to work processes, which can make them easier to learn and understand in comparison with other less formalised and perhaps more abstract processes. This will reduce frustration and as a result make employees more content with their working environment. Quality processes without the discipline of process improvement may not in themselves guarantee quality outcomes when viewed across the whole of business. It may mean, however, that staff are better satisfied than if these processes were not in place. This is because, when established, quality practices lay the foundation by which employee work will be measured and therefore the rules of engagement, once understood can be met.

However, staff satisfaction can very quickly lead to staff dissatisfaction. When the quality processes are defective or are not followed in a disciplined and uniform manner by all who are a part of the process, employee dissatisfaction soon results. Then the processes will, because of faults or unfamiliarity, cause a disconnection between the staff member and their work outcomes. Frustration will be the result, and with it comes a feeling of disempowerment because of an inability to excel. This is when staff can
exercise their expertise by engaging with the structure and processes of the organisation by having the process improved through a continuous improvement mechanism. This has the dual benefit of recognising the abilities of individual staff members and of improving the overall organisational system, because of them.

Where a continuous improvement mechanism is functioning, the dissatisfaction will be short-lived and the staff member will most likely feel very satisfied with having achieved a positive result. Where this fails to occur and the staff member has personal goals, such as employment by a market leader or a renowned quality product, then their concern and alienation from the ability to create positive change of the process may lead to termination of their services. This is not only a costly situation to redress but potentially leaves the organisation with the primary issue still to be addressed.

**Quality as a Driver of Compliance**

Employees in a quality organisation will have their performance measured against the organisation’s quality goals. Performance is usually via a “trickle-down” effect from board to base-line personnel. It commences with the board or committee of management who establish core deliverables for the organisation and metrics for the measurement of the organisation to meet or fail to meet these objectives that are aligned with the quality system. These objectives are then mapped as deliverables against the relevant roles in the organisational structure, commencing with the board and working through chief executives, executives to managers and supervisors to employees. A manager for finance, for example, may report to the executive director finance, or the chief finance officer he or she will have as a deliverable, the meeting of all goals with regard to recording and ensuring that financial reporting goals are met and monitored. Staff in the finance team will have duty statements that deliver these goals through performance indicators. When examined as a whole, this mapping will demonstrate that the needs of the board are met through the duty statements for the staff in the area. Where a shortfall is incurred, this is either addressed through increases to duties or increases to staff. This system of performance indicators is then measured on a regular basis to ensure that targets of quality are being met. These may include quality, quantity, timeliness, growth, customer satisfaction, staff
satisfaction, budgetary goals, legal requirements, audit results and other metrics that underpin the aspirations of the organisation.

Persons who work within a quality framework will be audited. Their work will be closely monitored and appraised to ensure that they are meeting quality standards and that they are working towards refining their processes via process improvement appropriate to organisational goals. This is the first level of compliance; where compliance means conformity or accordance and agreement (Random House, 2007). Staff agree to terms of service, accept duty statements to support their role and are required to conform to those statements to remain employed. This occurs from the board level downwards. Board members are required to meet the goals of the organisation and, where relevant, shareholder needs to ensure that the value and stability of the organisation is ethically and prudentially maintained. For a listed organisation this will be reflected in the share price.

It is important to understand that apart from shareholder value, organisational and institutional goals are established in response to internal and external drivers. These include those internal metrics that organisations aim to achieve, such as market share, employer of choice, profitability and prestige. External drivers will include statutory requirements, which usually require strict adherence to specific rules and time frames to prevent sizeable monetary penalties. Some of these, either at a state or federal level include payroll tax, land tax, group tax, stamp duty and the meeting of responsibilities of management established in the company law and the superannuation Acts (Australian Government, 2009a, 2009b). Also required, is standard reporting of data to the Australian Bureau of Statistics; this includes sales and manufacturing information on a monthly and quarterly basis and census reporting, including biographical and other pertinent data from individuals to assist with government planning with a five-year cycle. Lastly, to meet regulatory requirements, either to a targeted non-homogenous group such as the Australian Securities Exchange for all public companies or at a service provision level, as is the case with higher education and AUQA for Australian universities. In this last case, regulation to a rule is required by an authority and a regulator is that person who ensures the rule is met (Random House, 2007).
Ultimately all organisations and institutes that embrace quality frameworks are regulated. Whether internal, external or both, the resulting disciplines will impact on organisational market response and may influence ongoing status of the organisation. For example, is an organisation compliant to an internal agreed framework or does it meet the regulators’ guidelines, or perhaps, as in many cases, both? Where the meeting of the provisions of an external regulator is essential for an organisation, to do so effectively by organisations will often be reflected in increased income and prestige. This means that very employee in these quality embracing organisations is provided a set of rules that they have to meet and in that way they are regulated. It is true that generally, all employees are answerable to an authority and must meet the rules of their employment. What is different in an organisation with a quality-framework is that the employee’s rules will be audited, together with the outcomes of their work. Their work will be measured, charted and reported on against the quality framework to ensure that they are being consistent. It is also necessary to ensure that their part in the organisation is compliant, either with the requirements of a regulator, their own quality framework or both.

**Quality as a Driver of Control**

Overarching regulation and the need for compliance to quality drivers’ results in two very distinct sets of quality gatekeepers. For the purpose of this work, the term “gatekeepers” is defined as those people who, through their knowledge and position relative to other stakeholders, are able to exert significant power in their specific sphere of influence.

Internal quality control agents are gatekeepers. In a quality organisation they are usually empowered through their organisational status, position description, duty statements and even their role title. Because of these factors, they are then expected to ensure that members of the same organisation and those who interact with it meet certain quality outcomes. It is not uncommon for these people to insist on, as a part of their mandate on compliance, to sets of quality outcomes for both consumers and suppliers. The ability to impact upon consumers, over and above that of product delivery, can be affected by controlling relevant processes. For example, if a consumer seeks recompense for a faulty product, the claim may be declined by the organisation.
if the consumer has not met the rules specific to any guarantees that are in place for that product. If the same consumer has met organisational requirements, while refunds might be readily forthcoming, there may be a strict method, recording and receipting of faulty merchandise before any monies are exchanged. All of these practices, may be frustrating to the customer, however they make the tracking of faulty goods possible and are positive for the organisation, and eventually if quality deliverables are met will increase benefits to future customers. The internal quality control agents manage these organisational processes through monitoring and measurement.

The regime for suppliers is often more pervasive. Partnering arrangements may be initiated where quality metrics are shared and results articulated to the purchaser. Suppliers may be required to produce evidence of meeting quality outcomes, such as with an ISO audit to ensure ongoing contracts. Whatever the implemented system is, if an organisation discovered that products or services being supplied were of a lower standard or quality than expected, a call from the quality team – either directly or indirectly— would soon advise the supplier of expected outcomes. From the supplier’s perspective this may be recognised as an external control mechanism; from the perspective of the originating or purchasing organisation this is an internal mechanism for quality control and management.

The other area of influence for the internal quality control agent is either as the sole practitioner or as a principal player in the enforcement of the organisation’s quality framework. These agents are the keepers of the flame so to speak. To be effective, they will embrace the principles of their quality framework with the passion of a true zealot and go forth converting each person, they address within the organisation, encouraging all to be active participants in the quality framework. They will also have what quality practitioners refer to as, a quality focus on all they view; this will be at both the macro and micro level, as neither will be effective on its own. In larger organisations, there is a dedicated quality team who will have the responsibility for delivery of the quality training, compliance, audit and measurement of the key performance indicators at an operational and strategic level. They will act as a conduit between regulators external to the organisation and the organisation itself. The power
and levels of influence within their organisation will bear a direct relationship to the organisation’s quality objectives and ability to meet regulatory outcomes.

Meeting regulatory outcomes and their relevance to operational strategies will depend very much on the actual service or product and the regulators involved. As shown above, for some industries, apart from government or shareholder regulation such as company law and tax law, the only persons they will be required to comply with may be their customers and the quality metrics of those customers. At a retail level, this will depend on the market they seek to attract and maintain. Retailers’ competitors and the relative size of the organisation in comparison to their market and the resultant available market share will also influence the level of quality control that they will need to maintain. As a service or goods provider to other organisations, the level of quality control will depend on their own frameworks or models for quality outcomes and those of their customers. If, for example, they provide goods to the government, there is usually the adherence to strict quality measures to ensure acceptance at delivery and, as a result, payment.

There are, with many industries, industry regulators. These regulators, by the very nature of their processes for ensuring compliance and regulation, are external gatekeepers. These can be at either an industry level or at a discipline level. Using the aged care industry as an example, disciplines such as nursing, occupational therapy, diversional therapy and psychology all have their own regulatory bodies that practitioners must maintain registration with to be allowed to work. In aged care, there are different regulators for segments of the industry sector that vary across state boundaries. A significant sector is residential aged care and is governed by aged care Australia. The other main sector, home care has numerous funding bodies that may include: Aged Care Australia, the Department of Veterans’ Affairs and Disability Australia, all with diverse programs that have their own compliance guidelines such as community nursing, home and community care, community aged care packages, extended aged care at home and extended aged care at home dementia. To meet the requirements of both internal and external gatekeepers, organisations must ensure they fulfil the requirements of these quality agents. To maintain a quality focus, this typically requires a mapping exercise to ensure that all of the regulators’ needs are met.
with one all-encompassing quality framework. Thus, through this process, both the requirements of internal and external gatekeepers will be addressed.
Quality Strategies

Risk Mitigation

A significant reason for the identification, adoption and enforcement of a quality framework in most organisations is to eliminate risk as much as possible.

To do this, a risk assessment tool will be used. This requires that all potential risks in the organisation be identified, rated and then strategies for reducing the risk established and policies and processes to support them. A continuous improvement plan will be simultaneously incorporated into these strategies, together with a disaster recovery plan and a business continuity plan. Staff will be allocated responsibility for risk reduction and the quality program will promote measurement and monitoring processes to ensure that roles and responsibilities are met within stated time frames.

A business continuity plan is an organisation’s overarching risk mitigation strategy. It must be a simple yet expansive document that can be understood by all of the organisation’s staff. A sound business continuity plan will address the entire businesses issues and deliverables and allow for disruptions to service provision, emergencies and disasters. The disaster recovery plan is a part of the business continuity plan and should only be acted upon to ensure continuity of business in the time of a disaster. With a high reliance on computers in most business settings, the information technology function often has its own business continuity plan and disaster recovery plan. These are then integrated into the organisational plan should a holistic threat to the organisation, such as fire, require all processes to be addressed in unison. The business continuity plan will typically have as its objectives the maximisation of sales and service delivery, the minimisation of problems and negative impacts upon the customers and staff and the quickest possible recovery without impacting further upon risk.

A disaster recovery plan will depend on the work of the organisation. The National Herbarium, for example, is worthy of discussion as it has a disaster recovery plan that outlines many of the processes that many organisations have to be effective and also identifies and addresses industry-specific issues. The generic processes include the
establishing and ongoing management of the plan, then prevention and preparedness, followed by reaction to a disaster, which includes the immediate response and the planning and recovery. Recovery includes the responsibilities of designated recovery staff and then moves into specific duties for the herbarium staff to conserve, record and recover their plants. The final stage of the plan is restoration and rehabilitation. This includes the procedures for restoration and the post emergency re-evaluation (Newey, Lepschi, & Croft, 2008). An effective disaster recovery plan will have responsible staff and their duties clearly articulated with strict reporting lines and rules of engagement. To be effective, it should be role-played at least annually and when it is being established, each stage must be fully tested, assessed and adapted until appropriate, and then incorporated into the whole to ensure its efficiency should the plan ever be required.

The business continuity plan and the disaster recovery plan are macro policies and processes. Two holistic, yet micro risk mitigation processes are continuous improvement and control charts. As discussed in Chapter 2, control charts are employed by many organisations as a tool to support their quality programs and to recognise and minimise risk on a day-to-day basis. Control charts collect data that is relevant for the process that they are monitoring over a period of time. For example, a university might record the time taken to respond to a student inquiry. A policy would already be established and expressed in the public domain for that institution and data kept on all student inquiries. This would be mapped against expected outcomes; where these outcomes are met, the process would be perceived as functional. Where there have been problems, these would be investigated and where there is an ongoing issue, a process improvement strategy would be adopted. Once a new process is agreed upon, tested and implemented, the monitoring would then begin to identify whether an effective improvement had been achieved as evidenced by the results.

When reviewing the results of the control charts, organisations often decide that improvements could be exacted in some areas. They might then reduce the allowable error rate and change the specification for the process to force process improvement to facilitate improvement. In the example of the student inquiries; by changing policy and reducing the number of days or hours for a response to a query and having the
team responsible work towards meeting the new policy, if effective, they will have
gained a quality improvement by altering previously agreed specifications.

Continuous improvement can adopt a number of forms; however, it should achieve
what it claims and that is to be continually developing processes and through this
work, improve them. As a principle, this is problematic as it assumes that all
functioning processes can be improved upon and contrary to the first principle of
control charts that suggests if the issue is not ongoing, no action is warranted.
However, given that many would agree that few organisations and even few processes
within organisations are perfect, the principle of continuous improvement is important
to any quality program. As business practices and the nature of consumption and
supply alter, improvements will be required to bring organisational practices back into
line with their stakeholders’ requirements. In regulated industries, one of the
stakeholders will be the regulator as in Aged Care as an example, the regulator
demands to see continuous improvement across its standards for a supplier to remain
compliant.

Revenue Maximisation

From the service provider’s perspective, an important driver of quality outcomes is the
ability to raise revenue. Where this is a result of income received via consumer
confidence then customer satisfaction will be uppermost in the key strategies to affect
this result for an organisation. Where price is the key driver of this satisfaction, then
excellence of quality outcomes will be diminished to the point when price becomes no
longer a contributing factor in the purchasing process for customers. A good example
of this is the “$2.00 store”; here one may select from many goods that will fulfil the
role intended but often without the guarantees expected with well-known brand
names. For instance, a box of batteries can often be purchased for less than the full
price of one or more brand-name batteries from a battery outlet. When the consumer
is unperturbed by the inconvenience of changing these batteries regularly, the less
expensive version could be satisfactory. Where there is reliance on quality outcomes
as, for example, in a smoke detector, then most consumers would seek a quality item
with the added cost involved in providing a performance guarantee.
Where revenue is a result of competition for scarce resources, such as government funding, then competition is based on quality of performance and often reputation for maintaining that level of quality over a period of time. A student striving for a scholarship works at his or her optimum level of performance to secure one. In most cases this will require that a similar level of excellence or quality of output be maintained to ensure ongoing receipt of funds should that student be successful.

In the aged care sector, scarcity of government funding proportional to applicants has resulted in high levels of regulation and a narrowing or consolidation of the number of service providers over time (Aged Care Standards and Accreditation Agency Ltd, 2009). In this sector, strict compliance to quality outcomes is required by service providers not only to ensure the maintenance of existing funding levels but also to demonstrate their ability to manage any increases of funding. In doing so, it is essential for the service provider to prove continuous quality improvement. A continuous quality improvement model that will identify, improve, deploy and monitor process improvement and simultaneously succeed the scrutiny of the regulators assessment team must be implemented. To be able to do this, new and existing process outputs are often measured through statistical analysis and the use of control charts as discussed earlier (see Chapter 2). These tools enable service providers to monitor progress over time and more readily identify areas for improvement. It is hoped these improvements will lead to improved service for customers, as well as provide the evidence required to attract increased funding.

The ability to attract scarce resources is also an ongoing strategic focus of researchers. One area for attracting funds in Australia has been through grants awarded via the ARC. These grants have been made as a result of submissions for funds and are awarded based on merit of proposal and need for research outcomes. The ERA seeks to work in tandem with this funding mechanism and the assessment of AUQA to establish a metrics-based funding system for allocation of research dollars. The objective is that research funding in Australia, as a part of a body of work will have met strict quality controls through a regulated compliance mechanism. Through this process the university, using the researcher’s credentials, will seek funding for future projects.
One of the potential flaws in this model will be that if it follows the aged care funding model, recipients of funding have prior funding levels maintained in future funding rounds unless they have been deemed non-compliant. The absolute adherence to quality of product and award on merit is removed in subsequent rounds. A non-compliance only affects future funding rounds if the service provider has been unable to work with their regulator to address this non-compliance over a period of time (Aged Care Standards and Accreditation Agency Ltd, 2009).

Therefore, should this model been mirrored in the ERA, first-round recipients of funding will retain a distinct advantage over those who receive less funds or those who seek funding for the first time in future years. This occurs for two reasons. The first is because of the perceived nature of compliance. In this model, regulators can demonstrate – with the evidence from prior applications – that successful funding round applicants have attained a specific level of quality outcome. It is further believed that successful applicants are able to maintain the levels attained at the time of the receipt of funds. Also, given the nature of regulation, it is assumed that through process improvement these service providers should have improved on their starting position and is therefore worthy of ongoing funding.

The second cause is the start up costs of establishing an entity to provide the funded services. In most industries these costs are substantial. It is argued that funds previously allocated to a service provider should be matched. It is deemed that to do otherwise would be unfair to the service provider and lead to unintended consequences. One such result could be to act as a deterrent to future competitors moving into the market and to potentially lessen quality outcomes because of reduced competition.

It is essential for research programs to be able to attract sufficient revenue to be self-supporting and to also pay for the cost of attracting this funding. However, given the costs of entry and maintenance of a research program, competition for publishing space, competition for scarce research dollars and the other commitments of researchers, one would have to question why universities follow this strategy.
Prestige Enhancing

The answer to this question lies in the necessity to increase revenue. An essential component of revenue maximisation is to attract students at all levels, be it undergraduate or postgraduate, to build on the reputation of a university or faculty, by enhancing the prestige of credentials conferred by the institution. This is a financial strategy and if successful, will assist with the ongoing financial viability of the institution. The ability for universities to attract local, national and international students will increase revenue. The attraction and retention of these students will be as a result of a number of things, including: cost, proximity to students, courses on offer, teaching staff, location, accommodation, reputation and accessibility. While not an exhaustive list, the ability for Australian universities to attract international students and thereby advance their reputation occurs in a number of ways.

A revenue cycle that has two major components is created. Working within this cycle will impact upon the issues raised in this thesis. It occurs as a result of the process and is a consequence of the cycle. The two parts of the cycle are: firstly, that the ability to attract international students enables universities to receive revenue that is not tied into government grants; and secondly, should they be able to meet student expectations, their reputation will be further enhanced and the on-flow will be that they attract even more international students. This is the revenue cycle for international students. The ability to attract international students offers universities a deregulated income. This will impact upon design quality because it necessitates that the design schools meet standards deemed by the international student as appropriate for those schools to be successful in an internationally competitive market. The evidence of their success is through the attraction and retention of international students.

To understand how this works, I adopted the role of international student and researched online to seek the top global universities. The QS TOPUNIVERSITIES site is the first result in my search. Collaboration between Times Higher Education and Quacquarelli Symonds has produced a simple site that is accessible and user friendly. This site lists the top 100 universities on an annual basis. The Australian National University (ANU), which is ranked sixteenth, is the first Australian university listed with
the other seven Australian universities in the top 100 all members of the GO8. The methodology used by Times higher education and Quacquarelli Symonds was to examine a number of weighted indicators to reflect the following attributes, as outlined in Table 3.

Table 3. Times higher education and Quacquarelli Symonds indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic peer review</td>
<td>40%</td>
</tr>
<tr>
<td>Employer review</td>
<td>10%</td>
</tr>
<tr>
<td>Faculty student ratio</td>
<td>20%</td>
</tr>
<tr>
<td>Citations per faculty</td>
<td>20%</td>
</tr>
<tr>
<td>International faculty</td>
<td>5%</td>
</tr>
<tr>
<td>International students</td>
<td>5%</td>
</tr>
</tbody>
</table>

(Quacquarelli Symonds, 2009).

The citations section is of interest to those universities that work to improve their status based on research. Times higher education and Quacquarelli Symonds use the Scopus database to produce their results and express that they factor performance against the size of the research body (Quacquarelli Symonds, 2009).

On the QS TOPUNIVERSITIES site for Australian universities, rankings by indicators show that for academic peer review, six are in the top 100; for Employer Review, the University of Melbourne is placed in the top 10 with 15 Australian universities in the top 100. When looking at Faculty Student Ratio, only two Australian universities are in the top 100. For the Citations per Faculty indicator, Australian universities do not feature, with the results heavily focused on the United States who succeeded in all but the eighth spot in the top 10.

International faculty as a metric, based on the proportion of international faculty members, identifies Curtin University of Technology in the top 10 and additionally holding 15 places in the top 100. Lastly, International Students, based on the proportion of international students per student body, has three Australian universities, RMIT University, Curtin University of Technology and Swinburne University of Technology placed in the top 10 and 19 Australian universities in the top 100. In 2008,
the most effective universities within Australia and New Zealand included the entire membership of the GO8, together with Macquarie and RMIT universities (Quacquarelli Symonds, 2009). However, when examining the methodology, 50 per cent of the weighted criteria rely heavily on academic and employer review as the method of collecting data. This method is open to the charge of being entirely subjective.

Another list often referred to is produced by the Shanghai Jiao Tong University. In their Academic Ranking of World Universities they use the following criteria and weighting (See Table 4). Unlike the Times higher education and Quacquarelli Symonds ranking, the Shanghai Jiao Tong University is based on statistical analysis that identifies awards and cited works of research within highly recognised journals, such as Nature and Science and those that are listed in the citation index for Science and Social Science (Shanghai Jiao Tong University, 2009).

Table 4. SJTU weighting of criteria for academic ranking of world universities

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of education</td>
<td>10%</td>
</tr>
<tr>
<td>Quality of faculty – staff</td>
<td>20%</td>
</tr>
<tr>
<td>Quality of faculty – cited research across 21 categories</td>
<td>20%</td>
</tr>
<tr>
<td>Research output – articles specifically published</td>
<td>20%</td>
</tr>
<tr>
<td>Research output – articles specifically indexed</td>
<td>20%</td>
</tr>
<tr>
<td>Per capita performance</td>
<td>10%</td>
</tr>
</tbody>
</table>

(Shanghai Jiao Tong University, 2009)

Having broader categories than the Times higher education and Quacquarelli Symonds, the Shanghai Jiao Tong University places Australia in the Asia/Pacific region, together with New Zealand, Japan, Israel, Singapore, China and South Korea. In the top 100 world universities Shanghai Jiao Tong University has the ANU ranked fifty-ninth with a regional rank of third. The University of Melbourne is ranked seventy-third with a regional rank of sixth and a national rank of second and the remaining Australian university in the rankings is the University of Sydney at ninety-seventh with a regional ranking of eighth and a national ranking of third. When examining the data by region, the top 100 Asia/Pacific universities have 15 Australian universities listed (Shanghai Jiao Tong University, 2009).
Table 5. International students as a percentage of total studying 2008

<table>
<thead>
<tr>
<th>University</th>
<th>World ranking</th>
<th>Int. Students as a % of total students</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>RMIT</td>
<td>206</td>
<td>43.3%</td>
<td>1</td>
</tr>
<tr>
<td>Curtin UT</td>
<td>232</td>
<td>41.7%</td>
<td>2</td>
</tr>
<tr>
<td>Swinburne UT</td>
<td>401–500</td>
<td>38.4%</td>
<td>3</td>
</tr>
<tr>
<td>Macquarie U</td>
<td>182</td>
<td>34.7%</td>
<td>4</td>
</tr>
<tr>
<td>U South Australia</td>
<td>303</td>
<td>33.5%</td>
<td>5</td>
</tr>
<tr>
<td>Monash U</td>
<td>47</td>
<td>31.9%</td>
<td>6</td>
</tr>
<tr>
<td>U of Adelaide</td>
<td>106</td>
<td>26.4%</td>
<td>7</td>
</tr>
<tr>
<td>U of Sydney</td>
<td>37</td>
<td>26.2%</td>
<td>8</td>
</tr>
<tr>
<td>U of Melbourne</td>
<td>38</td>
<td>25.3%</td>
<td>9</td>
</tr>
<tr>
<td>UT Sydney</td>
<td>234</td>
<td>25.3%</td>
<td>10</td>
</tr>
<tr>
<td>Griffith U</td>
<td>325</td>
<td>22.7%</td>
<td>11</td>
</tr>
<tr>
<td>UNSW</td>
<td>45</td>
<td>22.3%</td>
<td>12</td>
</tr>
<tr>
<td>ANU</td>
<td>16</td>
<td>21.8%</td>
<td>13</td>
</tr>
<tr>
<td>U of Tasmania</td>
<td>291</td>
<td>21.2%</td>
<td>14</td>
</tr>
<tr>
<td>Latrobe U</td>
<td>242</td>
<td>21.2%</td>
<td>15</td>
</tr>
<tr>
<td>U of Newcastle</td>
<td>286</td>
<td>20.7%</td>
<td>16</td>
</tr>
<tr>
<td>UWA</td>
<td>83</td>
<td>20.3%</td>
<td>17</td>
</tr>
<tr>
<td>Deakin U</td>
<td>396</td>
<td>19.4%</td>
<td>18</td>
</tr>
<tr>
<td>UQ</td>
<td>43</td>
<td>18.4%</td>
<td>19</td>
</tr>
<tr>
<td>JCU</td>
<td>401–500</td>
<td>18.0%</td>
<td>20</td>
</tr>
<tr>
<td>Flinders U</td>
<td>273</td>
<td>13.6%</td>
<td>21</td>
</tr>
<tr>
<td>QUT</td>
<td>212</td>
<td>13.3%</td>
<td>22</td>
</tr>
<tr>
<td>Murdock U</td>
<td>401–500</td>
<td>12.7%</td>
<td>23</td>
</tr>
<tr>
<td>U of Wollongong</td>
<td>207</td>
<td>9.9%</td>
<td>24</td>
</tr>
</tbody>
</table>

(Quacquarelli Symonds, 2009)

In examining the criteria for both the Times higher education, Quacquarelli Symonds and the Shanghai Jiao Tong University, they seek to highlight quality outcomes, albeit
the Times higher education and Quacquarelli Symonds are more qualitative than the Shanghai Jiao Tong University’s quantitative data collection. While there is no conclusive link between the ranking system and enrolment in 2003, approximately 77,000 international students were studying in Australian universities ranked third behind the United States of America and the UK in English-speaking countries for offshore study (Quacquarelli Symonds, 2009). By 2007, 455,000 international students were enrolled to study in Australia with 177,760 enrolled in higher education (Hobsons, 2009).

Table 5 indicates international students as a percentage of the number of students enrolled at universities cited on the QS TOPUNIVERSITIES website. It is important to note that a number of the lesser-ranked universities, especially the universities of technology have the highest percentage of international students.

RMIT also has the greatest number of international students with Monash University ranking second and Curtin University a close third. RMIT and Curtin University are ranked 206 and 232 of the top universities respectively while ANU, the outstanding university in both the Times higher education, Quacquarelli Symonds and the Shanghai Jiao Tong University ranking systems had 21.8 per cent of its total students as international students and numerically was placed at 20th of 24 universities. One of the interesting aspects of the data was that the universities of technology had a higher percentage of international students than the other universities with RMIT, Curtin University of Technology and Swinburne University of Technology having the greatest representation of international students on their campuses.

**Measurement and Assessment**

Most measurement can be achieved very scientifically or even statistically. The above Table 5 illustrates the ranking of Australian universities, completed using both qualitative and quantitative data. Comparing data collected and measuring it against other data from many countries and even more universities has constructed this particular university ranking. Within the data, further analysis is completed giving ranking by faculty, which may be different to all over ranking for that university. For example RMIT is ranked at 206 overall; however, it is ranked at 94 for engineering and
information technology while the University of Sydney has as overall rank of 37 and a ranking of 41 for engineering and information technology.

**Measuring Design Research**

The measurement of design and design artefacts and research requires practices that are different to those employed for empirical research such as those used in the sciences. Visher of the ARC, raised some of these issues in *Creative Arts and the new ERA* (Australian Research Council, 2008a). Three of the four challenges outlined include: the identification and choice of indicators that are discipline-specific; how inter-disciplinary research will be evaluated and reported; and the selection of research indicators that will ensure appropriate outcomes (Australian Research Council, 2008a).

Visher argues that the Indicators Development Group has 12 experts advising the ARC, who together with the analytical testing team and after consultation with discipline-specific representatives will ensure that discipline-specific indicators are appropriate (Australian Research Council, 2008a). The creative arts sub-group, for example, is considering a number of problems with potential indicators, including: issues surrounding peer review, how much research exists in the research output, possible suitable indicators and applied indicators and also esteem measures that are robust and can be measured statistically, and non-journal-specific measures that can be utilised for ranking and measurement of the creative arts. These areas for assessment might include curated events, actual publishers and commissioned works (Australian Research Council, 2008a).

The need to consider alternative methods for evaluation and ranking is in part due to the complexity of the cluster. The reduction of the 13 panels under the proposed RQF to eight clusters in the ERA has resulted in what was to be Panel 13 *Creative Arts, Design and Built Environment* becoming the humanities and the creative arts cluster (Australian Research Council, 2008a; Commonwealth of Australia, 2006). This contributes considerably to the cluster with design as a component of creative arts, uniting with the disciplines of humanities for the purposes of evaluation in the ERA. Therefore, design research will have a significantly broader group of disciplines to be measured against for funding dollars. Differences in potential issues for the creative
arts and humanities sub-groups are also recognised in the ARC presentation, where the six issues outlined above are differentiated by the lack of need for other ranking methods such as commissioned works and curated events as these are not meaningful for the ranking of disciplines included in the Humanities sub-group (Australian Research Council, 2008a).

**Design Assessment Tools**

When looking at the assessment of design research, this complexity has at its roots the difficulty with assessing design. How is design to be articulated so that it can be clearly identified for comment, assessment and ranking? In Chapter 4 I discuss the properties that construct what current theorists argue is design. However, in this section of the work I will examine how different design disciplines measure their outcomes. Quality frameworks are fundamentally about measuring outcomes against established practices, policies and procedures. Whether the framework is tailor-made, industry-specific or in-house, it will have established standards against which data will be collected and evaluated. How accessible and identifiable design attributes are for potential measurement is what I wish to establish.

Design cuts across most disciplines at some level; a scientific test, a medical procedure, a social policy, a religious text, a computer program, a building, a power grid, an environmental recovery program, a geological process, an archaeological dig, a farming strategy, are just a few processes that rely on design. In fact, just as early Neanderthals utilised elements of quality control to make the second stone axe, those same Neanderthals used elements of design to achieve this outcome. Fitness for purpose is often used as a set of metrics for assessing quality and it would be reasonable to adopt the same criteria for assessing design, even design research. Consequently, does quality equate to design? When viewed broadly, good design should ensure better quality than bad design. A TQM system would want to be designed in such a way as to ensure quality of outcome. To design a system to meet design outcomes creates challenges due to the nature of design.

Design has a symbiotic relationship with its end product. To understand design deliverables I have looked at three disciplines that speak openly of designers and
design to identify how design is measured. They are fashion, building and the automotive industry. From each area I have looked at the criteria of one example that is accepted by the industry as a valid measurement tool. This acceptance is evidenced by the designers’ uptake of the design challenge presented.

Design is integral to the fashion industry. We talk about designers and the design of a garment as a part of everyday language. The Australian Wool Industry uses four major criteria to judge their annual fashion awards (See Table 6).

Table 6. Australian wool industry judging criteria

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction techniques</td>
<td>45%</td>
</tr>
<tr>
<td>Design skills – age group suitability, creativity, fashion awareness, colour</td>
<td>40%</td>
</tr>
<tr>
<td>Overall presentation – visual impact, pressing, accessorising</td>
<td>10%</td>
</tr>
<tr>
<td>Portfolio – pattern changes, suggested presentations</td>
<td>5%</td>
</tr>
</tbody>
</table>

(The Australian Wool Industry, 2009).

The building industry – specifically the housing industry discusses architects, their designs and the impact of design upon the finished product. The Housing Industry Association, in partnership with CRS has annual housing awards. They advocate that the awards ensure greater sales and exposure for successful participants as well as a higher resale value for customers. They list the criteria for their awards as: workmanship, design efficiency, visual appeal, energy efficiency, innovation and market relevance (Housing Industry Association, 2009).

The car industry is also very dependent on the philosophy of design excellence. Car manufacturers discuss their designers and the resulting designs with pride. Brochures from the leading car manufacturers all mention design in their text. Awards for cars typically examine their industry through categories that look at different cylinder number and price brackets. There is even competition among award givers on who has the most creditable awards.
The NRMA claims that they have one of the most creditable and prestigious award programs while Australia’s Best Cars professes to have the most thorough, accurate, objective and authoritative awards program. The annual review includes three main scoring criteria each with sub-categories (see Table 7).

Table 7. Australia’s Best Cars annual review scoring criteria

<table>
<thead>
<tr>
<th>Value for money</th>
<th>Pricing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Depreciation cost</td>
</tr>
<tr>
<td></td>
<td>Fuel consumption</td>
</tr>
<tr>
<td></td>
<td>Running and repair costs</td>
</tr>
<tr>
<td></td>
<td>Warranty</td>
</tr>
<tr>
<td></td>
<td>Standard features</td>
</tr>
<tr>
<td>Design and function</td>
<td>Safety</td>
</tr>
<tr>
<td></td>
<td>Security</td>
</tr>
<tr>
<td></td>
<td>Environment</td>
</tr>
<tr>
<td></td>
<td>Comfort</td>
</tr>
<tr>
<td></td>
<td>Space</td>
</tr>
<tr>
<td></td>
<td>Practicality</td>
</tr>
<tr>
<td></td>
<td>Ergonomics</td>
</tr>
<tr>
<td></td>
<td>Build quality and finish</td>
</tr>
<tr>
<td>On-the-road performance</td>
<td>Performance</td>
</tr>
<tr>
<td></td>
<td>Ride</td>
</tr>
<tr>
<td></td>
<td>Handling</td>
</tr>
<tr>
<td></td>
<td>Braking</td>
</tr>
<tr>
<td></td>
<td>Smoothness and quietness</td>
</tr>
<tr>
<td></td>
<td>4WD Ability</td>
</tr>
</tbody>
</table>

(Australia’s Best Cars, 2009)

While fashion, building and automotive are three very different industries; the similarities when measuring design and design excellence are surprisingly similar. It is
these similarities that I hope to capture in the methodology section when I have the opportunity to analyse data from the respondents of the 10-part questionnaire. Understanding how design is measured and, in fact, whether designers consider it can be measured in the first place is critical to the success of the ERA. This is because of the metrics-based standards in this excellence program and the audit requirements of the AUQA program that supports it.

Quality in Higher Education

Assurance

At the same time as design and designers have been faced with competition in many fields, universities rising to these challenges within the provisions of the ERA will firstly require compliance with the existing AUQA standards. Meeting the requirements of any quality framework provides a complex set of issues that will require universities to question their product mix and consider their core deliverables from within an increasing set of constraints and a resultant narrowing of focus. This is because scarcity of resources could result in unnecessary and disruptive shifts within the academic community as a result of the struggle for these scarce resources. These resources include: knowledge, the keepers of knowledge, the ability to create impact, and the availability of funds and government funding. The Hon Julie Bishop MP in 2006 released final recommendations for the RQF with a flow chart and facts sheet (Expert Advisory Group, 2006). These recommendations elicited a response from universities that included the area of measurement. Questions were also raised that included: the measurement of quality and impact, early career and broken service researchers, scarce resource allocation, costs – capital and administrative, access to infrastructure, allocated funding and Australian and international competitiveness (Group of Eight, 2005; Swinburne University of Technology, 2005).

Many of these concerns remain with the ERA and in themselves are not inconsistent with the issues raised by other industries about competition for government funding. Other sectors, such as the aged care sector (the example that I have used to highlight these issues in Chapter 7) have adopted differing strategies to meet with levels of government regulation depending upon their own sophistication as an organisation.
The larger organisations will operate their own quality assurance program in tandem with the government regulations. Typically, mapping exercises will have been carried out to ensure that all requirements of the government regulators are either met or exceeded by their own program. Where an organisation has to meet the requirements of a number of regulators this is complex. When managed effectively, the ability to ensure that all requirements are met or exceeded on an ongoing basis makes for an organisation that will be in control of its quality outcomes and, as a result, the ability to meet government requirements and attract funding.

The issue here is with organisations that are not yet at this level of either size or maturity. If they are reliant on the government standards to ensure quality outcomes this may run contrary to their own goals, philosophies and desire to grow and be equal to or better than the competition; an outcome that is required as a minimum, to ensure funding in their areas of choice. An outcome that is also integrated into the economic reality of scarcity of resources, in this instance is research dollars. Should all institutes vying for these research dollars implement similar strategies to ensure a positive outcome from research submissions, then significant costs will have been expended across the sector with the result of increased compliance with government statutes. Whether or not these changes will improve design is a question to be answered. Whether or not these changes can ensure accurate measurement of design for the process of allocating research dollars is also a significant issue.

In October 2005, the Carrick Institution for Learning and Teaching in Higher Education published a report by Stevens (2005) entitled ‘Promoting and Advancing Learning and Teaching in Higher Education: The Messages from the AUQA Reports’. This report is important for a number of reasons: firstly, because it was published under the banner of the then Carrick Institution now the Australian Learning and Teaching Council; secondly, because it seeks to establish benchmarking parameters for quality and effectiveness of teaching and learning processes in higher education and also that it seeks to facilitate improvement and institutional strategic change. Finally, it also seeks to achieve these goals by utilising the 25 AUQA reviews of institutes current at that time. Twenty-six messages from the AUQA reports were examined in this report (Stevens, 2005).
It is important to remember when reading the Stevens report that the AUQA audits are founded on fit-for-purpose principles. Barriers to planning exist due to the ignorance of planners to the outcomes of quality planning and the flow-on to quality teaching and learning. This flow-on affects course development, which relies on a number of integral aspects, in particular compliance with process. A culture of quality is required to ensure quality outcomes. Professional accreditation is external and therefore must be quality assured. Moderation is a quality assurance tool and programs that seek to improve teaching quality need to ensure benefits to students. Overcoming staff resistance to evaluations will provide better data for assuring quality outcomes and similarly, the appropriate management of student input and feedback will also lead to better quality assurance outcomes (Stevens, 2005).

AUQA messages are not dissimilar to actual audit reports and the objectives of quality frameworks as outlined earlier in Chapter 3. While the report covers many of the areas of higher education, the work on research is focused on all of the aspects of supervision. These include: registration, training, monitoring and evaluation, and the associated standards and systems. There was no analysis of the flow-on to research outcomes and the measurement of possible increases in the level of research as a result of benchmarking, best practice and quality assurance initiatives.

The AUQA maintains a full audit program across Australian universities. The results of this are available to the public via their website www.auqa.edu.au. As at June 2009, 39 universities had been audited once, several had been audited twice and those remaining have a second audit planned. The exception is CSU, which has been audited twice with a third audit planned (Australian Universities Quality Agency, 2009a).

Public reporting by the AUQA on university audit results includes publishing the audit visit dates, details of the audit panel, the audit report and progress report. Second visits highlight themes to be addressed and, in part, these support the recommendations of the first audit report. For example, CSU had an initial audit in July 2004; the follow-up report listed 11 commendations, 10 affirmations and 21 recommendations. Affirmations included those areas that the university had identified as requiring more development and usually where some work had commenced or had timelines established for work being undertaken. An example is Affirmation Ten, which
is an acknowledgement by the AUQA of CSU’s need for more effective academic workload management systems (Australian Universities Quality Agency, 2009a). The report details the work that has been undertaken to date and what has been achieved. It also lists action to be taken in the future, including funding initiatives, particularly in priority research areas, review of the calendar of sessions and course architecture. Areas that would benefit from further improvement of processes include: cross-portfolio management, quality improvement, guidelines for review process and the understanding and intent of benchmarking. In addition to this, are the requirements of CSU’s academic senate, quality assurance, continuous quality improvement, operational alignment to teaching and learning plans, equity of academic service and the centralised review process. Reporting of external expertise utilisation, policy compliance of subject outlines, consistency, student systems, student attrition and region-specific research are also to be addressed. Issues surrounding a strategic framework for internationalisation, accountabilities, third party providers, partnerships and 360 degree feedback and risk management will be also be managed (Australian Universities Quality Agency, 2009a).

CSU offers a number of design degrees: these includes the Bachelor of Arts: Graphic Design, Design for Theatre and Television, Photography and Applied Art and Design that includes a subject VPA 316 Design Research (Charles Sturt University, 2009). At a postgraduate level, a Master of Database Design and Management is offered. A review of information about CSU depicted that design elements and the successful measurement of outcomes are written into the student handbook in the areas of survey design for research projects and how to measure risk as a component of management design (Charles Sturt University, 2009).

CSU and the other audited universities stated their priority as, the meeting of the requirements outlined in the recommendations and the ongoing work in those areas of affirmation that required completion from their last audit. For CSU, the subsequent audit due to commence in October 2009 has as its themes: internationalisation, professional education and practice-based learning. Each of these were areas highlighted in the initial report (Australian Universities Quality Agency, 2009a).
Quality assurance and enhancement at CSU evolves from the Office of Planning and Audit. The university states that it is committed to delivering institutional strength, sustainability and reputation by establishing a culture responsive to change, the alignment of values, performance and planning through quality and continuous quality improvement, accountable governance and the appropriate stewardship of resources. This will be done with the support of the Academic Senate and the review cycle, which includes planning and budgets, practices and processes, organisational form, performance and function (Charles Sturt University, 2009). CSU does not have any other quality frameworks and relies upon the audit and response process as managed by AUQA for quality outcomes.

Summary

This chapter has sought to understand the qualities of quality assurance; how it assists to define the organisation through quality frameworks, continuous quality improvement and benchmarking strategies to reduce risk, increase revenue and prestige, maximise profits and minimise variability in processes. I have discussed some design measurement practices that are employed by industries and also viewed the current use of the AUQA as a significant and often primary quality assurance program for Australian universities. In Chapter 5, I will seek to contribute further to the design element of this work: to provide an overview of what design means, some of the established theories, a number of the theorists who have worked towards establishing design as a discipline and finally, aspects of design research.

This will enhance the work with regard to quality and quality frameworks and seeks to further add clarity to the issue of Design Quality: Evaluating Quality as a Tool and the Potential Impact upon Design Outcomes of Quality Frameworks.
Part II: Design
Chapter Five: Design across Disciplines

Design . . . is an undiscipline, one that should be able to question anything and be allowed to try everything – provided its products are useful, work and benefit others (Krippendorff, 2007, p. 74).

Introduction

In Part I, Regulation, I discussed the quality aspects of this work, the evolution of TQM as a discipline and a number of frameworks currently used in Australia by educational institutes and corporations as tools to assist with the attainment of quality standards. In Part II, I will modify my focus and explore Design. By the end of the chapter, I will examine how the literature discusses design, providing as broad an outline of design theories as this chapter will allow and will explore the argument with regard to design being understood as a discipline. A basis for understanding the major theories in design is important as most design research and especially research that seeks funding dollars under the ERA will employ these theories to explain their arguments.

From this basis, I will examine design research with a focus on emergence and practice. This will support the work in Chapter 4 where I focused on design in the quality framework of the AUQA and the ARC, understanding that these two agencies would join with the ERA as the vehicle for funding of research in Australia in 2010. As all major universities have already met the needs of the ARC and AUQA, I hoped to determine how effective the design schools were in understanding the requirements of quality. This aspect of the work will be addressed in Chapter 6.

If design is to be effectively measured, in such a way as to offer positive benefits to design through the ERA, a number of contentious issues must be resolved. Firstly, design will have to demonstrate that it can be measured as an independent discipline and secondly, although very much a part of the whole, design must illustrate that it is worthy of being considered a discipline independent and with its own unique research capability. Lastly, as I have argued, compliance to quality frameworks will persist. For design to derive any benefit from quality processes, then design school staff must
understand and embrace quality as something that they believe will further their field of work in a positive manner to derive benefit.

The Nature of Design

What is Design?

Does design exist? This seems like a question bordering on the ridiculous; however, finding a definition of design poses a new set of difficulties (Dasgupta, 1992). Design as seen, heard, touched, smelt, argued and discussed as an independent entity suffers from the very fact of its symbiotic nature.

Design is more easily identified in concert with another discipline or practice. Fashion is a good example of this, where a style embodies a design that is born of the creator’s desire to meet certain needs. Similarly this aspect of design is transparently evident in many established disciplinary areas such as architecture, town planning and engineering where items produced; be it buildings, motor vehicles or towns, have at their inception and therefore at their core design. Here one can conceptualise how the relevant practitioners interpret design and how these concepts either verbalised or silent will encompass the way that the design is acknowledged as being evident in the end product. Even if influenced by discussion with others, the end formulation of what constitutes good or bad design is an individual response to a given design issue; a relationship born out of the sum total of a person’s knowledge and experience at that point in time; a decision that is going to increase their experience and give depth to their next design decision regardless of its complexity.

Thus, while design can only be identified in unison with an action or outcome, the need to be able to view design as independent from its outer body is increasingly necessary, at least from an academic viewpoint. Design schools are now established at a number of Australian and international universities. Undergraduate programs offered at the Swinburne Faculty of Design for example include: Communication Design, Multimedia Design, Interior Design, Film and Television, Industrial Design and Product Design Engineering (Swinburne University of Technology, 2009). Swinburne’s National Institution for Design Research (NIDR) offers research degrees that include the Doctor
of Philosophy (PhD), Master of Design by Research (MDes) and the Professional Doctorate in Design (DDes) (Swinburne University of Technology, 2009). These schools are in their infancy and the debate is still quite heated about design’s ability to prove itself as an independent discipline. Like other disciplines that acknowledge their relationship with design, designers view the design of an artefact as being the response to a requirement or satisfactorily meeting a need. However, because of their relationship with design as a discipline and with it, their belief in themselves as designers, they view the end product with a primary emphasis on its design and design centric thinking. Is the design of this website good? Whether the website is good is negated. The subject is the design, not the product.

The people at Paul Frank (Paul Frank Industries, 2008) stated this view most aptly in 2002 when they wrote on the packaging for an alarm clock that they did not guarantee the clock as they were designers not clockmakers. It is interesting to note that the design team at Paul Frank only saw their clever imagery on the clock mechanism as the design component and neglected the actual design of the clock that, from the clockmaker’s perspective, was the ability to transform a need into an outcome through appropriate design.

I argue that when assessing a creation, the perspective of the creator is fundamental to the outcome. An architect, for example, will view a building and see a structure that embodies effective or ineffective design, effective or ineffective construction and an ability to make an architectural statement while being either marketable, or having other considerations, such as being important architecturally. The architecture and what it implies will be of the main, however, the architecture has at its core, design. Dasgupta (1992) expands on this theme finding it a revelation that the artificial world has its own logic, which is clearly separate from the natural world. Influenced by Simon’s The Sciences of the Artificial (1996), he understood that while there are many sciences of the artificial there is one activity at the heart of them all, vis-à-vis, design. He refers to the science of design as distinct from other work in that it presents a paradigm for examining design; a design theory. With a background in engineering, Dasgupta (1992) was surprised, given Simon’s (1984) work that the only accepted respectable academic foundations in engineering were and to many extents still are the physical sciences.
Designers such as industrial designers, web designers and graphic designers, on the other hand, have as a primary focus the ability to demonstrate those aspects that will be regarded under scrutiny as being of good design. Useability or the ability to have engagement on any level will be an important outcome; however, lack of ability to meet a requirement will be seen as a design fault rather than one of construction. Again the focus is on design at every level from concept through to construction and the eventual engagement with a consumer.

Even given this quite distinct difference in the focus of designers, it is interesting to attempt to understand how designers view design. In their paper ‘How Does the Design Community Think About Design?’ Atwood, McCain and Williams (2002), inform us that there is no one universal definition of design that is accepted. They examine recent literature in the area and work towards a definition by looking closely at current views of design adopting a “sampling of definitions approach”, which covers a wide range of designers and their unique definitions of design. While it is their intention to have an overarching theory of design, they settled for simply noting that there are seven major topics in design represented by sub communities rather than one community of designers with diverse interests that, at this point in time can be articulated by one definition.

It is therefore important to understand these seven communities and who is representative of them. Atwood et al., (2002) argue that clearer insight into this contention comes from Simon in his 1996 work The Sciences of the Artificial, which almost achieves an all-encompassing view of design. Simon (1996) states the most appropriate study of humanity is the “science of design” and that this should not be merely a component of curriculum but learnt as a core discipline by every well-educated person. Atwood et al., (2002) summarise Simon’s arguments as stating that design is the process of developing courses of action with the intention of altering existing situations into ones that are preferred.

While looking at Simon’s (1996) work, Atwood et al. (2002) argue that his view of design and the designer’s desire to change a given situation into a preferred one is the key indicator that differentiates the sciences from the professions. This is a valuable
distinction and one that will be referred to later in the discussion when the science of design is discussed more closely. However, Simon introduced one more important point to the discussion: his “theory of satisficing” described as the ability to set goals with feasibility rather than optimal results as an outcome (1979, p.3). This dovetails with his (Simon, 1984) views on what he calls “bounded rationality” (p. 291). The resulting blend will lead to a satisfactory solution for a problem rather than the best possible solution given the constraints at hand. Simon’s (1996) belief in humans’ incapacity to deliver the best possible solution due to cognitive capabilities is pivotal to this outcome. It is interesting that Atwood et al., (2002) are adamant that Simon’s findings are because of his economist background. Perhaps they view this approach as one of cost benefit analysis meets scarce resources.

The second of the seven communities is also seen to be concerning cognitive work. Atwood et al. (2002) argue that Vicente, in his 1999 work Cognitive Work Analysis: Toward Safe, Productive, and Healthy Computer-Based Work has substituted social concerns for the economic mindset of Simon. Atwood et al. argue further that these concerns were founded during the Scandinavian union movement in the 1970s and are underpinned by the values of productivity, worker health and safety views that are substantially leveraged from the research of Rasmussen. In his formative model for design, Vicente (1999) seeks to use task analysis to maximise criteria that a design must satisfy in order to ensure that the end product supports work effectively.

Therefore, Cognitive Work Analysis (Vicente, 1999), seeks an explicit analysis of work to understand and provide suggestions for design to ensure this effectiveness. This analysis, both technical and organisational, will ultimately assist workers by providing them with the tools to best meet their work expectations and allow them to adapt to change in their jobs and their work environments (Atwood et al., 2002).

Alexander (in Atwood et al., 2002) shares this interest in environment. In Notes on the Synthesis of Form Alexander (1964), focuses on the problems that the potential design environment will have on the complexity of the design. He perceives the “ultimate object of design as being form” (Alexander, 1964, p. 15) with the relationship between the entities of form and its context being argued as the design problem that has to be
overcome. This design problem is overcome by “good fit”, (Alexander, 1964, pp. 16–23), which Alexander argues is as a result of form.

This fit, Alexander states, is apparent when it does not occur and uses the argument of fit (zero) and misfit (one) to further explain this theory by saying that form should not meet certain conditions, rather it should “create such an order in the ensemble that all of the variables take the value zero” (1964, p. 23). Alexander looks further into this issue by seeking to understand the patterns in a problem and the design of a physical form to address them. This Alexander does by decomposing the patterns into unique units and then addresses these units by understanding “that structural hierarchy is the exact counterpart to functional hierarchy” (p. 131) in physical objects. Atwood et al., argue that this analysis of context and units, as identified by Alexander resolves itself in a pattern language for architecture (2002).

Rittel (1973, in Rittel & Webber, 1973) on the other hand, has commonalities with Simon’s (1996) work on “artificial” (p. 160) science and examines the difference between design problems, “wicked problems” (p. 160) and what they refers to as the “tame or benign problems of natural sciences” (p. 160). Rittel and Webber stress that problems in the natural sciences have a finishing point, the end mission is clear; his wicked problems are by nature, problems that are defined in part by one’s idea for solving them. They believe that models for solving design problems do not work as the solution is very much tied into the concept of the problem and must be resolved with “unremitting judgement . . . and critical argument” (Rittel & Webber, 1973, pp. 155–169).

A link of a different kind is made when comparisons are drawn between Simon’s (1996) and Schön’s (1983) The Reflective Practitioner: How Professionals Think in Action, as both works are theoretical. Schön discusses how professionals cope with information or an issue that cannot be resolved with existing knowledge or models. Schön, talks about “reflection-in-action” (p. 21), which is very much an element of the design process. This holistic practice involves the process of reflecting upon the construction of a problem while formulating strategies and models that will explain its resolution (Schön, 1983).
Ehn (1990) concentrates on user interaction. In *Work-oriented Design of Computer Artifacts*, Ehn argues that systems designers need the understanding of not only complex organisations and their systems, but of the user who will interact with them. This knowledge, he argues, is not innate and users and developers must work in close collaboration to achieve worthwhile results. Referred to as the “Scandinavian” or the “participatory” or “work-oriented” design, Ehn’s work adopts the next dimension of defining design by acknowledging the interrelatedness between the key components that contribute to the design solution.

While Ehn (1990) considers the relationship between the environment, the designer and the user, Jones (1977) seeks answers for designers through classifications or taxonomies of design by studying design methods through “craft evolution, design-by-drawing to the logical, scientific and creative techniques” (p. 48). Through a classification system, Jones seeks to enable designers to match a design need with an appropriate design method. He divides his methods into three perspectives: the first being the “black box”, described as that part of the design process that is cerebral and often at a subconscious level. The “glass box” is the conscious level and is based on rational assumptions within the designer’s knowledge and control. The third is the “self-organising system”, which leads to a greater outcome of the design process for the designers by organising the search for a design solution while managing and evaluating the progress of the search.

A number of similar taxonomies have been spawned in engineering design. Dym (1995), for example, also promotes a tripartite response to the classification of design problems. His creative design response involves what is new and what requires new thought that is applied to given problems. Secondly, his “variant” is what is varied from pre-existing design solutions and lastly, the “routine”, which is a design problem that needs a solution for which the designer has all the knowledge (Dym, p.188). Candy and Edmonds (2002) also examine three activities involved in design. These are the phases of exploration evaluation and, once complete, generation. Candy & Edmonds (2002) remind us that three activities together with invention and keeping in mind any constraints and requirements will lead to design outcomes and propositions that have direct parallels compared with the work of both Dym (1995) and Jones (1977).
Design Theories

Even with the myriad of design problems that are often flavoured by the various design disciplines, the different end solutions and even the various taxonomies of design, Atwood et al. state that they may be closer to understanding the depth of the problem. Given that researchers have not established one definition of design, they (Atwood et al., 2002) add that design is design after all no matter where or when it is applied.

To the table Atwood et al., (2002) prepared, I add a third column. In this third column, I highlight the published fields of study or disciplines of the advocates. In a number of instances the relationship of theorists to their background appears to be explained by the argument presented (see Table 8).

For design to be acknowledged in its own right and to be measurable under the ERA, the product of the discipline must be evidenced by either works or by research. The ability to present design and have it assessed, as an independent discipline will also be dependent on the theories that have evolved or gravitated to and from its knowledge base and to be able to demonstrate that these theories have been used to analyse and explain the phenomena that is design. Theories shown in Table 8 surrounding design will be expanded on when viewing the literature discussing design as a discipline (Atwood et al., 2002).

Expanding upon theories surrounding design, Atwood et al. (2002) in their paper *How Does the Design Community Think about Design* introduced the reader to a number of theorists. The work of Rasmussen Pejtersen, and Goodstein (1994), Simon (1996) and Vicente (1999) who argue a formative model for design is required in order to ensure that the end product supports work effectively.

Alexander (1964) is focused on the problems that the potential environment of use will have on the complexity of the design and seeks to address issues in information management while Rittel (1973) looks at his “wicked problems” and Schön (1983) works on “reflection-in-action”. Others have included Ehn (1990) who tries to address
the complexity of the end user; Candy and Edmonds (2002), Dym (1995) and Jones (1977) all discuss the classification and the phases of design.

Table 8. Design theorists by background and argument

<table>
<thead>
<tr>
<th>Theorist *</th>
<th>Design argument*</th>
<th>Background</th>
</tr>
</thead>
<tbody>
<tr>
<td>Herbert A. Simon</td>
<td>Devising courses of action aimed at changing existing situations into preferred ones</td>
<td>Political science</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Economics</td>
</tr>
<tr>
<td>J Christopher Jones</td>
<td>Initiating change in things made by humans</td>
<td>Industrial design</td>
</tr>
<tr>
<td>Christopher Alexander</td>
<td>The process of inventing physical things that display new physical order, organisation and form in response to function</td>
<td>Architecture</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mathematics</td>
</tr>
<tr>
<td>Horst Rittel</td>
<td>Structuring argumentation to solve wicked problems</td>
<td>Urban planning</td>
</tr>
<tr>
<td>Donald Schön</td>
<td>A reflective conversation with the materials of a design situation</td>
<td>Architecture and planning</td>
</tr>
<tr>
<td>Pelle Ehn</td>
<td>A democratic and participatory process</td>
<td>Design and digital media</td>
</tr>
<tr>
<td>Jens &amp; Kim Vicente</td>
<td>Creating complex socio-technical systems that help workers adapt to the changing and uncertain demands of their job</td>
<td>Cognitive engineering</td>
</tr>
</tbody>
</table>

(Atwood et al., 2002, p. 126)*

Friedman (2003, p. 509) in *Theory Construction in Design Research: Criteria: Approaches, and Methods* tells us that one definition of research is “an illustration describing how something works by showing its elements in relationship to one another”. He argues that either research is the ability to illustrate working elements or the demonstration of relationships that distinguishes a model from a catalogue. That it
is these aspects that make a distinction between craft and science. Science allows for systematic thought, organised by theory whereas craft involves action.

The ability to question what we do and to pool knowledge for the use of others is a central issue in design. This is what Weick (in Friedman, 2003 pp. 508–509) refers to in theory building as “an act of disciplines imagination”. Friedman (p.508) calls on Simon’s (1996) explanation of science “to [devise] courses of action aimed at changing existing situations into preferred ones” (p. 508) to underpin this argument. However, Friedman does recognise the distinction between design that is allied to art and craft and design that attempts to make specific design outcomes predictable especially in industrial production and the digital industries. He further argues that designers who seek predictable outcomes have made the transition from the crafts to technical and social science where the focus is how to achieve a goal and this, he submits sets them apart from the artisan.

Friedman (2003) suggests that further discussions on theory are provided by Deming, Mautner, McNeil and Warfield. Deming (1993) argues that, experience will resolve the questions that have theory as their origin. Another argument is that theory is a proposition that allows for ethics of analysis or a rationalisation of the subject matter (Mautner). However, Mc Neil, through his 11 characteristics of general theory, is far more expansive about the key attributes of theory. Of particular note is his analysis of the core concepts of a theory. These are “stated in algorithmic compression, parsimonious statements from which from which the phenomena in the theory can be reproduced” (in Friedman, 2003, pp. 514–515). This economy or frugality and lowest common denominator aspect of the theory should, when applied, allow for ease of understanding and use. Mautier’s (1996) theme of simplicity is adopted by Varian (1997) who argues for the persisting with a problem until it becomes simple.

Warfield (1995) argues that by theorising design, individual unique cases can be brought together to create broad principles of explanation useful for problem solving. He draws our attention to the two main aspects of design: generic and specific. Generic is the part that will not impact upon the final outcome whereas the specific aspect will. In the generic process he lists humanity, speech, relational reasoning, archival representation, the design process and the design situation (Warfield).
Therefore, design theory is rich in theory, requiring commitment to empirical reality (Friedman, 2003).

It is interesting to reflect upon how these descriptions of theory work. Theory, it is argued, must have the capacity to hold true throughout a diverse set of instances (Sutherland, 1975). Weick (1989) argues that theory has to be shaped to meet the criteria of validity and verifiability. Weick states that for design in the late 1980s, these criteria were difficult to substantiate. A body of writings sufficiently rich to be useful and non-trivial was problematical given the newness of design as a discipline. Weick looked to future graduate programs, doctoral seminars and research conferences to provide the forums for theory development.

The identification of the need provides the impetus for the response to that need and thus enriches theoretical knowledge. Whetten (1989) identified the six significant elements of need as what, how, why, who, where and when. His focus is on parsimony, which together with comprehensiveness seeks to answer the "what" question, believing that sensitivity to these two competing virtues of meanness or frugality and completeness or fullness is the mark of a good theorist (Whetten, 1989). Whetten further explains that "how" links the identified factors in the "what" and uses comparative arrows as in a mapping exercise to initiate appropriate linkages by identifying the relationships. The "why" indicates the underlying selection of factors and the projected causal relationships while the "who-where-when" of need links the empirical data with the theory to substantiate it while setting the necessary boundaries on use and application (Whetten, 1989).

Friedman (2003, pp. 517–518) illustrates how theories can be contributed to by studying the works of Whetten and Parsons and Shils who explain that every logically integrated conceptual scheme constitutes a system and, in the same vein as Friedman’s model, argue that scientific theory is constructed of systems. The argument is that theory moves towards scientific goals by assessing levels of generality, complexity, closure, self-consistence and levels of systemisation (Parsons & Shils). Friedman (p. 519) concludes the discussion by reminding us that the "point of modelling . . . and of theory construction . . . is showing how things work.”
I argue that the discussion invariably leans towards explaining design within a scientific model; that there is a need for greater insight into the position of art and craft. Is it a requirement that the theory of one will invariably preclude the other? Friedman (2003) argues that design as a discipline is so generalised that it can be applied across a broad range of design areas including the technical, production and even advertising; therefore, a general theory of design is needed to support these many areas. However, in doing so, he (Friedman, 2003) warns against the idea that design practice is research and explains further that designers who believe one provides the other have as a result failed to develop grounded theory out of practice.

This is further complicated by the inability to distinguish between tacit knowledge and theory construction; an inability exacerbated because design with its craft tradition has relied on tacit knowledge. Citing Polanyi (1966), Friedman (2003) argues that theory requires more than experiential knowledge; in particular, it needs more than one’s own experience (Polanyi, 1966). It requires rules and its completeness is evidenced by the depth of its ability to be represented this way (Polanyi, 1966). Following on from Deming (1993), McNeil (1993) and Polanyi (1966), Friedman (2003) seeks “descriptive richness, theory as a guide to discovery, and modelling” (p. 520). He reminds us that for this to happen, explicit knowledge must be made articulate to enable shared communication and reflection and to act as the basis for theory construction and theoretical activities (Friedman, 2003).

**Design as a Discipline**

The debate surrounding how design is defined is as varied as the debate on the ability for design to stand alone as an independent discipline. Given the diversity and richness of design theories, the independent design schools at a number of universities globally and the growing body of design research and knowledge why does debate remain over whether or not design is an independent discipline? One suggestion offered is that the reason for this falls within the gamut of the Bologna Process (European Commission Education and Training, 2008). This process seeks to ensure that university design schools become more scientific in approach to meet the requirements of formal standardisation especially in Europe. In doing so, design schools will be forced to prove
themselves as a discipline within the policies and processes of the university system (Schneider, 2007).

A degree of tension will be created with this process, as design is a relatively new in the area of academic study and research. This is clearly evident compared with more established disciplines such as information science, physics, sociology, philosophy, mathematics or geometry (Weick, 1989). It is also the increasing connections between design, science and engineering and the increasing complexity of product technology that has resulted in the establishment of design as a discipline (Stappers, 2007). Therefore, while it is generally agreed that design is inherent in all artefacts, I suggest that the argument for it to be considered a discipline in its own right is resultant of the conflict against the Western historical development of the science of design. With its roots in the 1920s and resurgence in the 1960s, the desire to scientise design was perceived to be an answer to defining a method for constructing objects (Cross, 2001). This is what van Doesburg (Cross, 2001) the De Stijl protagonist expressed as an objective system.

The idea of design science is not new. Fuller (2008), an American architect, inventor and philosopher sought a “design science revolution” (p. 32). This was necessary to engage science, technology and rationalism to assist the human and environmental problems that he argued could not be solved by politics and economics (Fuller, 2008). Simon (1996) added to the development of a science of design by arguing for a design process doctrine that was intellectually rigorous, empirical in part and formalised while remaining analytical and teachable.

However, the design science revolution and its principles were being rebuffed by the 1970s, often by its former proponents with even Simon (1996) in The Sciences of the Artificial, saying in as early as 1969 that design should examine how things should be, whereas the natural sciences seek answers about how things are.

In the 1980s and 1990s, the next phase in the development of design as a discipline occurred. Journals such as Design Issues in 1984, Research in Engineering Design in 1989 and the Design Journal in 1997 sought to address problems specific to design – namely design research, theory and methodology (Cross, 2001). Design methodology
continued to develop strongly with a growing realisation that the outcomes of design were different. It was argued that the need for repeatability in scientific practice for validation of results was a defining distinction between the methodology of the sciences and design (Cross, 2001). At this time it was the mind-set and perspectives of designers that emerged and distinguished them as being different from other disciplines. Designers positioned design foremost in their thinking and likewise in their arguments about how design ensures the visibility of science (Willem, 1990).

This demarcation between design and science was a vital component to the evolution of design as a discipline. It was evident in Grant’s (in Cross, 2001 p.4) comment “The study of designing may be a scientific activity; that is, design as an activity may be the subject of scientific investigation.”

At the 5th Asian Design Conference in October 2001, Cross (2001) argued for the expansion, verbalisation and communication of design knowledge. He posed the idea that design knowledge resides in people, processes and products, and that although much of the knowledge is informal, the task of design research is to make this knowledge explicit. He explains that there has been an increase in the understanding of the potency intrinsic in design and the suitability of design thinking in its own perspective and that the value and appropriateness of design intelligence is occurring (Cross, 2001).

This is a powerful statement and is evidence that designers were then considering design as a stand-alone discipline; a discipline in its infancy, and one that I argue should make designers mindful so that the validity of this new field of design research is not corrupted or undermined by researchers from other non-design disciplines. Cross’s (2006, p. 90) work supports this argument with his paradigm of “the designerly ways of knowing.” A concept that he argues will lead to the development of a discipline of design capable of supporting design practice and design education and to the “broader development of the intellectual culture of our world of design” and at the same time understanding that at the same time design needs to remain interdisciplinary as well as disciplined to ensure that new knowledge and perceptions of design are created (Cross, 2006, p. 103).
Therefore, I would propose that what the above designers seek is for design to be recognised separately from other disciplines, to be legitimised as a discipline in its own right. Because of the nature of design, it should not be viewed in a scientific manner because it is not a science. However, the belief that it is not a science does not preclude design from having standards of rigour and a growing body of knowledge as with other disciplines. These standards and knowledge will support design’s ability to be recognised as a separate discipline.

It remains to be seen how rigorous the advocates for design are in establishing the attributes required for an independent discipline. For example, as a response to the question “Where is the body of knowledge?” Friedman (2000b), in his paper ‘Design knowledge: context, content and continuity’, proposes four areas that will create the foundation for design research to be built upon as both a professional field and an intellectual discipline. These are: philosophy and theory of design; research methods and research practices; design education and design practice (Friedman, 2000b).

The first philosophy and theory of design is answered in part by design research. One of the most enduring works, Simon’s (1984) Models of Bounded Rationality, seeks to explain a research orientation. This explanation also attempts to build an empirically grounded theory of human problem-solving.

Hatchuel (2001) argues that although Simon (1984) sought to establish a “Science of Design”, Simon’s design theory is incomplete. He supports this argument by stating that problem-solving is a restricted form of design. This idea operates in opposition to the idea that design is a form of problem-solving as discussed by Simon and reflected in his partial interest in the creation of social interaction (Hatchuel, 2001).

The second area of research methods and research practices is answered by examining a few of the leaders in this field. R. Buchanan writes for the MIT Press and was formerly the Professor of Design and Head of the School of Design at Carnegie Mellon. He was also the President of the Design Research Society, an international learned society founded in the United Kingdom serving a multidisciplinary network of researchers in 35 countries. His significant works include: Declaration by Design: Rhetoric, Argument, and Demonstration in Design Practice (1985); Rhetoric,
Humanism, and Design (1995); Strategies of Design Research: Productive Science and Rhetorical Inquiry (2007) and Wicked Problems in Design Thinking (1992) and focus on the theory and practice of design and the application of design thinking to new areas of professional practice (R. Buchanan).

The third area, design education, can be answered by looking at the work of the proponent. Friedman (2003) is a seminal figure in Fluxus, an international laboratory for experimental art, architecture, design, literature and music and has also been involved with Intermedia and mail art. He has written extensively about Fluxus and Intermedia and has edited several Fluxus publications.

Friedman (2003) has worked closely with such Fluxus artists and composers as Beuys, Cage, Higgins, Maciunas, and Paik. His significant works include: Behavioral Artifacts (2006); Design education in the university; Professional studies for the knowledge economy (2000a); Practice and Theory in Design Research (2005); Theory construction in design research: criteria: approaches, and methods (2003); and Twelve Fluxus Ideas 2007 (Friedman). Exhibitions of his work also include Ken Friedman Art (net) worker Extraordinaire at the University of Iowa Museum of Art in 2000 and Twelve Structures at the Centre of Attention in London in 2004.

Also pertaining to the support of design as a discipline is the demonstration of design tradition. Therefore we must question whether a tradition exists in design practice. Critical examination of design across its many interdisciplinary fields is occurring. The results of this examination will provide a better understanding of design and contribute to the small but growing body of knowledge that is specific to design. Examples of this are evident across the Western academic world. Researchers like Hatchuel from the Écoles des Mines de Paris; Conklin from the CogNexus Institution in Napa, California; Buchanan from the School of Design at Carnegie Mellon University; Friedman at Swinburne University of Technology in Victoria, Australia and former professor in the Department of Culture, Communication and Language at the Norwegian School of Management in Oslo and at the Design Research Centre at Denmark’s Design School in Copenhagen and Green Director of the Design Research Group UNSW Australia to mention just a few, add continuously to design research and underpin the philosophies and practices that go into making up design tradition.
Design Research

Emergence

Is design research an oxymoron (Krippendorff, 2007). A question, I suggest, that would appear to most reasonable given the exactitude of scientific research and the understanding of design science and other design research methods as explained by notable persons in the design field such as R. Buchanan (2007) and Cross (2006).

Science, I submit, typically examines data collected (often in a laboratory setting) that is a record of measurement and observations or texts to support a hypothesis or theory. To be accepted by the scientific community, these observations must have the capacity to be replicated exactly, achieving the same results as other scientists. This ability to recreate a situation and maintain exactly the same results provides science the reassurance that their processes are objective and separate from individual thoughts, feelings, perspectives and cultural interpretations.

Archer (1995) expands upon this by saying that the tradition of science has a number of quite distinct research categories. These include: fundamental research, strategic research, applied research, action research and option research, with the greater part being applied research. The ideal he says, is for scientific research to produce outcomes that are enduring in validity. Research in the humanities on the other hand can be based on empirical evidence and can cite exemplars to lead to a postulated conclusion; however, they are typically subjective. There needs to be a distinction between the practice, the scholarship and the research of the arts. It is also important to understand that research in the sciences and research in the humanities have become less distinguished. This is because science seeks to explain and the humanities seek to evaluate (Archer, 1995). Therefore, in both scientific and design research, data must be resilient and able to withstand ongoing analysis. Krippendorff (2007) argues that by attaching metaphors to the data, the collectors of that data imply that they are far removed from the process other than to collect it and use it as findings. So how do these issues resolve themselves for the benefit of designers and design research?
In the introduction to the book *Design Research Now: Essays and Selected Projects*,
the editor Michel (2007) reminds us that design research has only emerged as a part of
the discipline of design in the past 40 years. R. Buchanan (2007) explains that the
nature of products and how they have interacted with humanity has led to many
theoretical and speculative treatises on these effects. This, Michel argues has raised
difficulties for design-based research due to the complexity of conditions in which
design is studied and practised. He further contends that it is chiefly because there are
no systematic bases in design that are scientific and therefore able to be argued
independently (Michel, 2007).

The difficulties that the English language attributes to design are given clarity by
Bonsiepe (2004) who argues that the word “design” does not allow for the differences
between design and *Entwurf*. *Entwurf*, a German word, does not have a precise
English translation; however, it is closely aligned with the word meaning “project” for
the sake of this discussion this translation has been used. Bonsiepe claims that the
popularisation and commonplace use of the term “design” has detracted from its
meaning as projecting. This has resulted in design now being freely associated with
many pursuits that have little bearing on the professionalism that the term project-
maker carries (Bonsiepe, 2004).

Design science and design education appeared almost simultaneously in the 1920s in
the Stijl Movement and at the Bauhaus. The research further established itself after the
Second World War. Industrial designer Archer (1995) saw design research from an
industrial design perspective as a type of systematic inquiry that seeks to generate
knowledge about the embodiment of design, an understanding of artefacts and
systems made by humans. The 20th century also brought with it a need to understand
the impact of products and the production process on the environment. To understand
the differences between nations that are caused by inequity in the consumption
function, whether intentional or unintentional and what is evidenced as the ongoing
effects of this consumption upon third world countries. To also understand the effect
on countries that are marginalised from many of the products and processes involved.
Therefore, design research faces a number of problems that in many ways are not fully
resolved, such as practice, production, knowledge and education, as well as the social,
cultural, individual and philosophical implications (R. Buchanan, 2007).
There are two main reasons for the evolution of design research: the first being the emergence of professional practice and secondly, increasing academic activity in the design area. Engineering and architecture are credited with having the first works of design research and this is deemed to be a result of the need for developing logical methods of design and then being able to evaluate them. Unfortunately this need distanced design research from industrial and graphic design, as the needs were quite different. The categorical conceptual systems of the systems theorists, mechanical engineers and computer scientists were different to the needs of those designers seeking to understand complex design problems through consumer research (Bonsiepe, 2004).

Despite the ability for design research’s style of ethno-methodology – viewing the behaviours of consumers in their natural environments to create knowledge, this type of research also raises the issue of the validity of non-laboratory research (Suchman, 1987). Therefore, bearing in mind the work by Buchanan (2007), Bonsiepe (2004) reminds us that it is interesting to note that many of the freedoms of design are provisional and that it is plausible that design science will become the prerequisite for practising design. The argument that research is cognitive while design is non-cognitive must eventually be challenged. Given the complexity of many contemporary design problems, the nature of design is changing and with it forms the need for designers as well as design researchers to put more thought into potential solutions (Bonsiepe, 2004). Cross, explains that design cognition or the designerly way of thinking is a result of the shift from the need for design science to design discipline.

**Practice**

As with all research, for design research to be successful it needs to be developed, articulated and then communicated in such a way as to increase knowledge positively. Whether it is designerly or not, to achieve success, the research must follow the established precepts of all research, and that is to be purposive, inquisitive, informed, methodical and communicable. It must include reflection by the researcher and this reflection must be useful as knowledge to understand, share and to assist in other
future research. Given the idiosyncrasies of design as a relatively new and emerging discipline, how does design research differentiate itself?

R. Buchanan (2007), when talking about the emergence of design research, reminds us that speculations about the design of products have been academically written about for some time. While this research has emerged through other disciplines when working through their own relationship with products, the resulting treatises have been ultimately important for design as a discipline as they provide the foundations for current design research. R. Buchanan goes on to argue that for design research to be purposeful it will need to: encompass the past, be critical and have a theory sustained by empirical research with additional philosophical conjecture. He urges researchers to guard against having a single focused perspective – a monist vision of design that will distract from the richness and complexity of the discipline. Also for design to embrace the past, the present and the future, practitioners need to understand design history, design criticism and all of the diverse philosophies and theories of design and design education. Design practitioners must also understand that this pluralism is fundamental to this field of research; a pluralism that suggests that design is many rather than restricted to one field of study with each component requiring its own special focus to resolve its own inherent problems and special needs (R. Buchanan, 2007).

Cross (2004) argues that design has three sources: people, processes and products; people who are not exclusively designers hold design knowledge. Design is a human condition as, unlike other animals, most humans are very good at design. He suggests further that a useful subject of design research would be to investigate this human ability (Cross, 2004).

Process is the second area that Cross (2004) identifies as a source, which is understandable given the nature of process and process improvement. As I have argued, all processes require design, and for the discipline of design understanding the methodology of design processes will contribute to design knowledge and the ability for techniques to be understood and disseminated. Plans, patterns, drawings, sketches, storyboards, schematics, models, prototypes and wire frames to name but a few are visual representations of the designer’s design whether complete, an aid or a
work in progress. Electronic aids such as computers and complex software packages have added to the tools available to the designer and to the researcher.

Lastly, design knowledge also exists in the products. The knowledge is inherent in the products that have either adopted the attributes of design from the designer as either intended attributes or as a reflection of the design possibilities attached to it by the designer. These products then draw upon prior knowledge and experience to become complete. As Cross (2004) acknowledges, this is typical of the craft-based designs where traditional knowledge explains how best to shape, create and use an object so that designers incorporate these precedents and exemplars into their work.

Research that has as an objective the ability to enhance learning and add to the design body of knowledge is of value. It is also worthy of mention that all design requires an element of research, whether this is structured and established in a formal process within standards or is informal in nature. It is still research and remains an essential part of the work of design for a thought to become reality. Products and the results of design would not evolve or shift in outcome if some form of research was not undertaken. This is perhaps easiest to recognise in the craft-made products where the precedents and prior exemplars assist designers to improve in what has gone before. They do not have to completely reinvent the wheel.

R. Buchanan (2007) identifies strategies that emerged during the 20th century to establish the field of design research. Pervasive strategies, in that they not only present perspectives of design and products that are broad but also because they can be applied to human inquiry at all levels. These strategies have persisted despite their challenges and successes, and R. Buchanan argues that they prevail in shaping design research today. They have been moulded through disappointments and successes that have widened our focus and increased the diversity in a way that has increased our understanding of design and include: dialectic, design science, design inquiry and discipline of design (R. Buchanan, 2007).

The first strategy seeks to explain design and its products as a part of a system or larger whole. The resulting dialectic views individual opinions and perspectives as being equal to technical analysis (R. Buchanan, 2007). The second strategy seeks to explain
design and its products by identifying and analysing the workings of the mind and the material world. This is the strategy of design science and was popular in Europe and North America in the last decades of the 20th century. The third strategy is a midpoint between the two and seeks to understand the experience of designers and users of products for explanation of design and its outcomes. The third strategy, design inquiry, investigates the human experience to explain design. As a strategy it addresses the concrete aspects of design as something people accomplish as a result of their knowledge and experience to redefine our world. It may examine the inventive and creative power of the designer or the designer’s ability to initiate social change through communication or argument in word or product. Alternatively, the discipline of design will seek to understand how design is synthesised in its many facets into creative work and how this is resolved within the community and how the community’s use of the resulting product will affect future designs (R. Buchanan, 2007).

Design inquiry is closely related to productive science and rhetorical inquiry. Productive science has as its focus the functional elements of products that are effective. It has as the basis of its inquiry the whole product and its potential achieved through refinement of those essential elements that are required to ensure effective performance. In analysis, productive science typically focuses on four elements: the method of designing, the production as well as the distribution, ongoing maintenance and either disposing of or recycling of the products (R. Buchanan, 2007). The second element addresses the materials used in a design. Are these tangible? What are their attributes and inherent nature? The third element has as its focus form. Under what circumstances is the form designed? What, if any, possible new technologies can be utilised? What are the dimensions, the desirability and usefulness and lastly, is the form static or dynamic? The fourth element seeks to understand the function and purpose that will assist human activity. This element understands that the rudiments of the performance of the task for which the product is designed, are essential to be able to provide a solution (R. Buchanan, 2007). To understand these performance rudiments better critical and historical elements of design study may be utilised (R. Buchanan, 2007).

Rhetorical inquiry has as its focus the experience of designing and the actions of the designer. Rhetoric in this context is the art of creation and discovery (R. Buchanan,
Historically rhetoric has applied to speech and a style of language but more recently it has come to include all human areas of activity and product creation such as artefacts, communication, interactions and even organisations. The use of rhetoric as a device may be formal as used in design research or less formal, including themes rather than devices when designing or understanding design. The most beneficial use of rhetoric is to understand the relationship between the designer and his or her intent and the end user of the resulting product to better gauge the nuances in the product that are as a result of negotiated needs and wants on all sides and the thought processes attached to these (R. Buchanan, 2007).

**Development and Innovation**

With all of the tools at the designer’s disposal as stated above, it is of interest that research in the arts has moved towards scientific research over time (Archer, 1995). Research in the arts is expected to expose something new; the purpose of the research must be couched in a clear question; the theoretical position must be comprehensible; data must be recorded for future research inquiry; conjectures must be open to being refuted both during the research and by later investigators; and the work must be published with full academic citations.

Archer (1995) states that some designers believe that their work is research; that the design outputs they accomplish amount to new knowledge; that publication can be achieved through installation, production, distribution or exhibition of their work. Archer extrapolates that while research may be required by the practitioner to create an outcome and that the end product might produce a radical new product or idea, the research undertaken to achieve this either orthodox or unorthodox result will not be the same as research activity when systematically applied to the academic requirements that constitute good research. Alternatively, if the newly designed artefact has been researched with the necessary data, theory and other research criteria followed and met then the new artefact could be relevant to a research project. It will have followed a research methodology as opposed to being researched for other objectives (Archer, 1995).
Krippendorff (2007) argues that research stifles design, as it cannot support or sustain designers’ practices. That research is, as a result of data analysis, the act of discovering certainties, whereas it is the uncertainty and the way it is managed that creates an outcome designers can commit to. He accepts that design is an activity for making sense of problems and acknowledges that concerns of design and practitioners are conveyed as the notions of perception, appearance and experience, posing the question of what benefit research can offer designers. Krippendorff discusses the difference between design science, science for design and the science of design. Design science is the rational and logical approach to design as a scientific activity. Science of design seeks to understand design through scientific investigative measures, calling on other disciplines such as psychology and sociology, it looks at design from the outside inwards and describes designers as being casually determined by forces beyond their control and as such offers very little of worth to design practice. Science for design is when design seeks answers from within the practice of the discipline (Krippendorff, 2007).

I argue that designers will create potential that is human centric, resulting in a greater design space from which designers can act. This will bring freedom to design as technical, psychological and sociological constraints, as well as the findings of scientific research are challenged and where necessary overcome. Designers must also be critical of their own methods, questioning their actions and the methods they employ rather than accepting precedents and discipline-specific methods that are deemed unquestionable. Designers will create variability; they will constantly look for ways of making change and in doing so, create a situation that expands design and its possibilities. These arguments are supported by Krippendorff (2007) who claims that to do so, designers will work with people to understand how they are placed within and interact with their environment; not to provide mere observations, but having a real understanding and influencing what they have the potential to do. Because there will be no reliable data to draw upon to explain future outcomes, designers need to be actively involved with stakeholder networks and be persuasive about their work and what they are proposing. To do this effectively, they must fully understand the conceptual capacity of diverse stakeholder groups (Krippendorff, 2007).
Stappers (2007) agrees that design seeks to understand or exert control over the human condition: however, he further develops this debate by stating that design seeks the same outcomes as research. Given this similarity, he argues that this equates to criticism between designers about designs and the criticism of researchers from different disciplines. In researching the disciplines that integrate design, Stappers suggests that what employers seek from students who have completed these studies is fourfold. The expectations include: the ability to have a cross disciplinary and highly specialised level of communication; the ability to integrate contributions across multidisciplinary areas; the ability to take action despite difficulties such as information being incomplete and the ability to maintain a final product focus throughout these processes. Designers are adept at these skills because as well as having strong evaluative skills they are also trained in generative thinking where conjecture is possible (Stappers, 2007).

Therefore, the ability to think and deduct at a formative as well as at an evaluative level, I maintain will enhance the designer’s ability to research both in the present and into the unknown future.

**Summary**

In this chapter I have focused on design. I have explored a number of the theories and theorists in an attempt to illustrate the diversity and complexity of the discipline of design and those disciplines that argue design is a factor in their end products. In examining the theories, my understanding is that to progress as a discipline, design thinking must persist in embracing theoretical stances for students of design and practising designers to be able to articulate their discipline. Theory will also enable clear insight into the unravelling of issues that have preceded an inquiry and give support to its understanding and in doing so, will contribute to the discipline.

The concept of design as a discipline is relatively new and still attracts argument internal and external to design. The notions of discipline and undiscipline in that designers must look beyond the obvious and seek variation in their actions have been investigated. Buchanan (1995) reminds us that there is the potential for design as a discipline; however, this will not possess determinate subject matters as with other
disciplines. The subject, purpose and methods are integral to the whole in design and are essential to the result (R. Buchanan, 1995).

I have also discussed design research that includes both endogenous design research, which is research as a result of design issues and exogenous design research, which perceives design as a discipline worthy of research. Design research, while having early beginnings, was taken more seriously approximately 40 years ago. It has been argued that the difficulty with design research is the difference between the research cognitive and the design non-cognitive approach to the discipline. This leads to design research that typically adopts an ethno-methodology that often falters when imploring validation from the scientific community (Bonsiepe, 2004).

This is because design research often has to examine issues from two quite different perspectives. The first covers work to be applied before a new artefact can be created and second is the more formal requirements of a body of research such as a thesis as is required by the humanities tradition. Lastly, the needs of universities and the requirement to meet increasing levels of standardisation have led to design schools having to adopt policies and processes that will conform to university standards.

How design schools and their academics will respond to the provisions of standardisation will depend on how they view it. Dictated to by this philosophy, Chapter 6 presents the methodology of this work. Through a questionnaire it seeks to address some of the questions surrounding design measurement and innovation within a set of standards and a quality regime.
Part III: Methodology
Chapter Six: A Rationale for Understanding the Relationship between Quality and Design

There is a tendency among theorists to reduce design to a form of science, as if there is a fundamental predictive quality in designing that has eluded practicing designers (R. Buchanan, 1995, p. 24).

Introduction

In this chapter, I seek to provide clarity on how quality and the measurement of quality impacts upon the opinions and actions of design school academics. This will contribute to the work of the preceding chapters, which includes the understanding of the evolution and the current view of quality and quality management as shown through quality control, TQM and quality assurance and the understanding of design as a concept and as explained through a number of design theories. Also the work on quality as a developing discipline has, by necessity, been expansive. This is to highlight the pervasive nature of quality as a quantifiable and definable component of many human outputs and to understand the relationship between quality and compliance. The understanding of why quality was first deemed necessary and why it is increasingly pursued with rigour highlights the exponential characteristic of the quality movement.

To establish a foundation for the methodology of this work, I will initially outline the tools and models that I have developed for analysis. These are essential to enable an understanding of the primary question being addressed in this work. The positive aspects of both qualitative and quantitative analysis will be weighed and then applied across the work. The questionnaires, the participants and the provisions to minimise bias will be outlined. The responses of both the qualitative and quantitative questionnaires will be analysed and the results applied to the question to better understand the role played by design school academics and managers in the quality process. Finally, the results will be viewed through the lens of the economic rationalism.
The conclusion of this chapter will provide a foundation for Part IV: Regulation. In this section I will examine the impact of regulation on the aged care sector in Australia. The industry models have been adopted as a response to an increasing need for compliance and tools to maximise benefits from this compliance in an industry that has parallels with higher education.

This will allow for a discussion of the direction of my work and what I suggest is necessary research to assist in meeting the requirements to measure design.

**Rationale**

**Analysis**

Two approaches, theoretical and statistical, have been undertaken to gain insight into how quality frameworks will impact academic work within design. These approaches have sought to extend the body of knowledge that currently exists with regard to the understanding by design school academics of the ability for design to be measured through a quality or excellence framework.

Theoretical models that I have brought to this work are by a way of explanation of the social, cultural, political and economic positioning of quality frameworks in Australian higher education, especially with regard to the allocation of design research funding. Consideration of potential theories includes critical theory and neoliberal economic theory. Critical theory as argued by Habermas (in Geuss, 1981, pp. 55-58) and the evolution of communication will be examined to gain insight into the relevance of qualitative analysis to outcomes. Micro economic theory, in particular neoliberalism as a philosophy rebranded as economic rationalism in Australia will be examined to better understand the results of empirical analysis.

To employ these theories and methods usefully, it became evident that a clearer understanding of the differences in intent and response of qualitative and quantitative methodologies was needed. This was particularly necessary to enable a view of reasonableness to be measured with equity when comparing the work of design theorists. Sparrow and Turner (2001) provide depth to the issues surrounding these theorists when they discuss the choice of qualitative or quantitative methodologies.
This is an unrelated set of suppositions about the world, which are epistemological, philosophical and ideological and are more than simply data-gathering techniques (Sparrow & Turner, 2001).

A further strategy employed was the collection of both qualitative and quantitative data using the same questionnaire. This was implemented in an attempt to better understand the data collected from the quantitative questionnaire and to gain insight into the stresses being experienced by design school academics when confronted with the potential for another style of compliance with the ERA.

**Critical Theory**

An interesting aspect of this work was the need to establish a framework in which to study quality frameworks and their potential impact on design and design school strategies. This framework was necessary to view the arguments and analyse the data collected, as well as to understand the prevailing politics, culture and economics of the environment from which the data was collected. An important aspect of the work was the identification of theories that would assist with the explanation of the evolution of quality and the resulting regulation over the past 30 years in Australia. Once quality was understood at this level of regulation by those regulated, the ongoing maintenance of compliance through quality and excellence frameworks was also better understood. This knowledge has expanded to include the understanding of the rationality of successive governments to use quality to justify government funding in politically sensitive areas.

Of the two theories leveraged, the first was critical theory as explained by Habermas (in Geuss, 1981, pp. 55-58). Habermas was born when the initial work on critical theory was being initiated. From an historical position, critical theory had its beginning with a group of intellectuals uniting in Frankfurt, Germany (Wiggershaus, 1995). This group, initially including men such as Weil, Lukacs, Pollock, Horkheimer and Wittfogel, was dedicated to the scientific study of Marxism through the Institute for Social Research in 1924 (Wiggershaus, 1995). Originally having a focus on bourgeois society, the events of the 1930s and 1940s experienced a shift within the institution to the analysis of cultural superstructures. This shift was influenced by events such as the
Russian Revolution, the Hitler–Stalin pact of 1939, Hitler’s dominance over the Nazi forces in Germany, and the fascist leadership of Franco and Mussolini, which in combination led to the suppression of all independent liberal and social organisations (Wiggershaus, 1995). The emergence of a political system that was anti-democratic had an intense impact on the group and raised serious concerns for critical theory’s development. This arose at the same time as the unconfined expansion of Western capitalism and with it penetration into the political and social systems of science and technology (Darder, Baltodano, & Torres, 2003). Popularly known as the Frankfurt School, they were committed to understanding the world of objective appearances and, in doing so, offered clarity to often-concealed principles of social relationships (Darder et al., 2003). Applying Marx’s theories to situations that Marx had no experience or knowledge of, they eventually drew on other schools of thought to fill in the gaps. Strongly influenced by the work of Weber and Freud, they examined ideas such as consumption, production, distribution and money as a means of understanding the relationships that exist within these structures of domination and subordination (Giroux, 2003).

The Frankfurt School sought to influence those struggling against any form of domination. As a group they sought a better understanding of the relationship between the political and the economic in capitalism. They needed to know how Nazism and Fascism gained such phenomenal levels of support. Clarity with regard to the impact these events were having on individuals and the family was very important. They desired to identify whether these struggles would lead to any new ideologies given their question as to whether any social agent really enables progressive change (Darder et al., 2003). As McLaren (2003) articulates, critical theorists establish their basis upon the principle that men and women are fundamentally constrained in a world full of contradictions, inequities and asymmetries of power and privilege (McLaren, 2003). To adopt this theory, one then accepts that the individual is a component of a social fabric that he or she has participated in creating and that the problems of society are not isolated but exist because of the interactive relationship between the individual and society. However, perhaps even more important is that critical theory, while testing these relationships, refers to a school of thought and a method of analysis that is very much a process of critique (Giroux, 2003).
While the importance of the Frankfurt School cannot be overestimated as its members provide key insights into many disciplines and many ideas, I would argue that the fundamental importance of the Frankfurt School to this work is twofold. First, as a school of thought they separated themselves from rationality that saw science and technology used for new forms of domination. Additionally, they rejected all arguments and practices that subordinated human awareness and engagement to the necessity of universal laws (Giroux, 2003). Where Habermas (in Geuss, 1981, pp. 55-58) impacts upon this further is his belief in the evolution of communicative competence and the suppression or weakening of this evolution by the state, the market and the organisation. Habermas, however, has a positive attitude to modernity and in this way differentiated himself from the Frankfurt School. It is this positive view coupled with the human potential for reason that overlays the power of the organisation that I explore.

**Economic Rationalism**

The second theory that I argue is important to this work is microeconomic theory; in particular as it relates to economic rationalism as it occurred in Australia from the 1970s to the early 21st century. The reason for focusing on economic rationalism is twofold. It merges well with critical theory and provides an explanation of the relationship of universities to government when addressing the question of this work.

Quiggin (1997) explains that as a term, economic rationalism has been present since medieval times when it was applied to Protestants who desired the removal of restraints on usury. Introduced into Australia as a term in the early 1970s, it was applied to the philosophy of that section of the Labor Party who opposed protective tariffs and the support of agricultural prices by the government. In the 1970s, economic rationalism was significantly different to its more modern economic strategy in that it referred to reasoned analysis of policy formulation as opposed to self-interest, emotion and tradition (Quiggin, 1997). During this time with the Fraser Liberal government preceded by the Hawke Labor government, the critical thinking of this initial economic rationalist theoretical and policy content was gradually replaced by a faith in market forces and the driving requisite for efficiency and competition to achieve this.
While the benefits of economic rationalism are not agreed to by all, Millmow (2005) argues that economic rationalism was the prevailing economic theory pursued in Australia over the immediate past, promoting a recession-free period and one of the fastest growing economies in the world. That this economic situation will be reshaped by the current (2008–09) world economic downturn will be important to those institutes seeking research funds from the government. Australia, like the rest of the world, is subject to the effects of global markets and is now experiencing an economic downturn. This is at the same time as the ERA is being mandated. Significant to this work is the consideration that the now defunct RQF and the new ERA were formulated during a time of economic growth.

I argue that the ERA was written in a time of economic stability, with the need for much of the assessment criteria featured in the AUQA, the ARC and the ERA being about growing research facilities in current universities and research institutes. The economic climate of the 2008–09 period is exceedingly slow, diminishing to almost zero economic growth, a possible recession and at the very least monetary scarcity. An economic climate where stimulating consumer confidence, that is, public confidence in the economy, will outweigh the need for demonstrating public good. Therefore, the design of the ERA will be used to meet economic drivers vastly different to those envisaged by the proponents of the new framework. This does not mean to imply that the demonstration of public good and consequently, the accountability of those receiving monies from the public purse in not important. Rather it means that the way the principles of quality will be applied will ensure very different financial outcomes than those originally intended.

To explain this further, an understanding of what economic rationalism is and how this interrelates with the aspect of public good that the ERA is hypothetically to deliver is essential. Whitwell claims that what economic rationalism hopes to deliver is an end to sectional benefit and ad hoc subsidies (Whitwell, 1998). McChesney (2001) explains that neoliberalism, a philosophy from which economic rationalism has its foundations, is almost always entwined with a profound belief in the capacity of markets to use technologies to resolve social troubles more effectively than other ways. A twist on this theme is that neoliberalism provides an ideology that explains and promotes capital
interests (Hart-Landsberg, 2009). Pusey’s argument that economic rationalism is the doctrine that suggests markets and money will persistently achieve more than bureaucracies, governments and the law is often cited (Whitwell, 1998).

Pusey (in Whitwell, 1998) adds that economic rationalists will argue that history, nationality, culture and the government’s aspirations of public policy, goals and building the nation state are irrelevant. These considerations should be excluded as markets and market forces will provide a solution that will be economically rational. While an interesting argument, it provides a reasoning that assumes that the market will address all of the needs of a society via consumerism. It simultaneously places a huge burden of ability and faith in market forces and a corresponding apparent faithlessness in government. While it does not advocate a laissez-faire economy: economic rationalists simply believe that potential market failure will be less damaging to a society than the implications of a government’s inability to deliver in place of the market. Fundamentally, economic rationalists believe that any form of government is not subject to or disciplined by market forces and are therefore not meeting the same levels of efficiency (Whitwell, 1998). Even if this can be demonstrated as Bourdieu reflects; as a theory, neoliberalism is a mathematical fiction based on the abstraction of rationality (Bourdieu, 1998). This view is supported by Quiggin (1997) who reasons that as a theory it relies on logic deduced from self-evident axioms and enables absurd beliefs to prevail despite evidence to the contrary. Whether rational or irrational as seen from any perspective, it is ultimately about power: public versus private power and the outcome of which one will achieve ultimate control.

In practical rather than theoretical terms, however, economic rationalists look to increasing efficiencies to bring a market into equilibrium. A balance will occur when demand and supply are in balance with costs and prices being at a level that the market is satisfied to support. This will lead to full employment and labour costs that bear a relationship to the cost and consumption of a product. Economic rationalists believe that if there is a hindrance in this process, it is due to non-market intervention, for example, from trade unions, trade boards, tariffs or other government or non-market bodies. Economic rationalists argue that in all cases the government should resign their market-related functions to the market and where this does not occur, emulate the market system so that scarce resources can be more efficiently managed.
leading to a more dynamic economy with an increase in welfare and by extension, public good (Whitwell, 1998).

Johnston and Callender (2000) aid us to understand these issues especially the relationship between economic rationalism, the new managerialism and public good. In ‘Multiple Perspectives on Economic Rationalism and the New Managerialism: Power and Public Interest?’ Johnston and Callender return to the issue of power in that the community suffers from the influence of the new economic rationalist, the new managerialism public management paradigm. Furthermore, “that political elites have been unwittingly persuaded by the rhetoric of the business and intellectual neoliberalist’s to develop strategic public governance frameworks that favour them” (Johnston & Callender, 2000, p. 565). They argue further that the continuing value of economic rationalism and new managerialism will favour hierarchical order of power with the formation of competitive coalitions emerging to ensure market entry for new and weaker entrants is difficult.

**Tools of Analysis**

These two theoretical models are both useful when explaining the emergence of quality as an enduring tool within organisations and institutes in Australia. However, given the sheer economic implications of the arguments brought to bear upon corporate Australia for the maintaining of quality in day-to-day activities, I argue that economic rationalism is a more fitting model to explain the growth of this tool.

It is also important to understand the differences given to the two methods of data collection chosen: quantitative and qualitative. That a number of the sciences are able to measure and isolate findings without the need to establish context seems apparent if for no other reason than the fact that many of the findings can be absolutely replicated in geographically, economically, culturally and socially contrasting situations. However, the impact of context on the actions and perceptions that influence human behaviour cannot be easily isolated. Therefore, a different approach for extracting and analysing measurable data is required. Follett (1924) argues that Newton greatly contributed to the physical sciences by demonstrating the relationship of quantitative and qualitative analysis and that this relationship must be better understood by the
I argue that both approaches offer opportunities for increased understanding of this work, Design Quality: Evaluating Quality as a Tool and the Potential Impact upon Design Outcomes of Quality Frameworks, and have therefore employed both.

The fundamental differences between qualitative and quantitative methodologies especially with regard to their application and potential findings are essential to the choice of an appropriate methodology. These inherent differences have been successfully mapped by Newman (1997), (See Table 9) and underscore the necessity for both methodologies to be used in concert to complete this work.

Table 9. Quantitative style versus qualitative style

<table>
<thead>
<tr>
<th>Quantitative</th>
<th>Qualitative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measure of objective facts</td>
<td>Construct social reality, cultural meaning</td>
</tr>
<tr>
<td>Focus on variables</td>
<td>Focus on interactive processes, events</td>
</tr>
<tr>
<td>Reliability is key</td>
<td>Authenticity is key</td>
</tr>
<tr>
<td>Value free</td>
<td>Values are present and explicit</td>
</tr>
<tr>
<td>Independent of context</td>
<td>Situational constrained</td>
</tr>
<tr>
<td>Many cases, subjects</td>
<td>Few cases, subjects</td>
</tr>
<tr>
<td>Statistical analysis</td>
<td>Thematic analysis</td>
</tr>
<tr>
<td>Researcher is detached</td>
<td>Researcher is involved</td>
</tr>
</tbody>
</table>

(Newman, 1997)

Analysis of the quantitative data will be completed via statistical methods and are outlined below in the Method of Analysis section. However, analysis of the information gained via the qualitative questionnaires requires non-statistical analysis. There were two options for the collection and review of this data a collective case study analysis or comparative analysis.

A collective case study analysis could have been used to compare and contrast how academic responses have been framed (Stake, 1995). What is important is the
response to changes encountered during the formulation and initial implementation of the ERA across the nominated Australian university design schools. This is because the case study method is considered ideal when a holistic thorough examination is needed (Tellis, 1997). It will follow the four stages recommended by Yin (1994) as: design the case study, conduct the case study, analyse the case study evidence and develop the conclusions, recommendations and implication.

This empirical investigation into phenomenon in context would allow for a more informed result than an experimental or quasi-experimental study as the case study is designed to leverage multiple sources of data to enhance participant details (Tellis, 1997; Yin, 2002). It is not a sampling research but rather a selective process where the unit of analysis is critical and a narrow focus on one or two issues is required to understand the system being examined (Tellis, 1997). Multi-perspective analysis case studies allow for the researcher to consider not only the views and perspectives of the players, but also those of the relevant groups and the interaction between them (Tellis, 1997).

Problems of accuracy and possible generalisation are addressed through triangulation where the aspects of the analysis, such as the methodology, theories and multiple data set investigations can be brought to bear on the problem to ensure accuracy and alternative explanations (Tellis, 1997). Yin (1994) reiterates the issue of generalisation, arguing that analytical generalisation is different to statistical generalisation, as in analytical generalisation earlier theories are used as a model against which to evaluate the empirical results of the case study. Furthermore, he suggest that the difficulty with case studies is to determine sense rather than position (Tellis, 1997).

Comparative analysis has a number of attributes that complement the requirements of this work. As a tool, comparative analysis investigates beyond the single layer of information to understand other key drivers of the outcomes. As mentioned in Chapter 3 questionnaires were conducted; both with the same 10 statements that sought a quantitative response and additional personalised comments. The second questionnaire had a further four questions for which written answers were sought. The resulting answers were then analysed through a number of lenses. These included: design school participation level; experience with quality frameworks; gender and the actual
design field of the respondent. This information depicts areas of similarity and those that differ. A final open question was asked of all respondents, which allowed the opportunity for them to not only be critical of the questionnaire, which is essential to understanding the validity of the questions asked but to also provide respondents with the chance to add depth and clarity to their responses. Due to the nature of the study, comparative analysis was selected for examination of the findings. This analysis sought to understand responses given the different lenses identified above.

From this process, further analysis was undertaken to identify any underlying trends and unexpected findings. Again this is essential to the work to ensure the clearest picture of how design school academics view quality assurance and its ability to measure design. It was also essential as a link to the next step analysing the findings against levels of experience with quality frameworks.

Table 10. Questionnaire definitions

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>A result or end product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurable</td>
<td>Able to be assessed and rated for comparison</td>
</tr>
<tr>
<td>Excellence</td>
<td>That which is superior quality</td>
</tr>
<tr>
<td>Quality framework</td>
<td>A set of standards that seek to improve the quality and impact of what is being measured through rigorous application of an accurate assessment process that focuses on evidence</td>
</tr>
</tbody>
</table>

This comparison is essential given the structure of the ERA and the potential outcomes for Australian university research; therefore, comparative analysis as a tool was selected. Both quantitative and qualitative models have problems associated with individual interpretation. To this extent, the same questionnaire was used for gathering both qualitative and quantitative data. A double strategy was used: firstly, there was no discussion with the quantitative questionnaire’s respondents. On the last page of the questionnaire, the following instruction was given: “... I would welcome your comments on the definitions in relation to the questionnaire and any other thoughts with regard to quality assurance and the impact on design” (See Appendix a). The second strategy was to reduce interview bias by gathering qualitative responses via a
written questionnaire; thus refraining from assisting with interpretation of the material other than to provide a definitions section on page two of both of the questionnaires (See Table 10 and Appendices a and b).

**Interview Reliability**

No amount of preparation or strategy will fully negate the issues that surround interview reliability. In addition to this problem is that there is no evidence to suggest that any form of interviewing for data elicitation purposes yields more or less reliable data than another generic method (Breakwell, 2006). Regardless of the format of the interview or questionnaire, the researcher will rely on the understanding of the questions asked by the respondent and the capacity for the respondent to answer these questions reliably. This also means that whatever format the questions take, the researcher is unable to guarantee that the respondent will give honest and truthful answers without bias or prejudice.

Consistency within a questionnaire will not guarantee accuracy and scrutinising the internal consistency is certainly worthwhile; however, inconsistency will mean that the level of accuracy is problematic. One way to overcome the problem of inconsistency is to utilise a number of data collection strategies. To identify the reliability of the initial data may only require a sub-sample of respondents (Breakwell, 2006). However, none of these strategies will assist with the process where the respondent is not comfortable with the researcher. This issue can indicate, a negative reaction to the researcher, which may occur when the respondent does not engage with the mannerisms, gender, presentation, language or demeanour of the researcher or is negatively affected by the questions being asked. This may also occur in the reverse instance resulting in a positive manner: the respondent may be so charmed by the researcher or have a vested interest in a positive outcome for the research that they may either intentionally or unintentionally provide biased responses.

Research suggests that when the characteristics of the researcher interact with the issues under investigation these interactions will determine how the respondent reacts (Breakwell, 2006). It is then difficult for the researcher to ensure they have no effect, as what may interest one respondent may be entirely different to what interests
another. One strategy for reducing this effect is to have the same researcher collect the data, maintaining any effect from the researcher as constant across the data collection. Another technique would be to use a large number of researchers to as small a population as possible, reducing any possible bias and allowing for the analysis of potential researcher influence and where evident, some form of weighting to moderate the data (Breakwell, 2006).

Unstructured interviews offer the widest opportunity for what is referred to as interviewer effects to occur. The ability for the researcher to be structured not only in presentation of questions but appearance and behaviours throughout the interview will reduce the impact upon the reliability of the work of these effects. If there is a wide sample with many interviewers, the effect can become statistically unimportant; however, this is a problem for researchers examining a small possible interview pool due to the requirement to conduct all of the research personally. Due to the small size of the interview pool and the difficulties identified with interviewer bias as stated above, the strategy adopted was to elicit written response for qualitative data gathering in this study.

**Method of Analysis**

**Questionnaires**

A 10-item questionnaire was developed for the Design School Response to Quality Framework Quantitative (where T denotes Quantitative (DSRQFT)) and a 14-item questionnaire was developed for the Design School Response to Quality Framework Qualitative (where L denotes Qualitative (DSRQFL)) data collection. Both questionnaires included a comments section and were designed to identify the impact of quality assurance on the product of design. The questions were identical for the first 10 items and the comments question; however, the layout differed to allow for responses appropriate to the method of survey.

Respondents were asked a small set of questions regarding their demographics (See Appendix e), regarding such information as their age and gender. Both questionnaires sought to answer the following overarching questions from a design school academic’s
perspective, fundamental to this study: i) Can design be measured within a quality framework? ii) Is creativity impacted by the need to meet quality metrics? and iii) Is quality's impact on creativity positive or negative?

A five-point Likert scale was used to measure quantitative responses. Participants circled the number next to the statement that either met their view or most closely reflected it. The scale had as its range “totally disagree” (1) to “totally agree” (5). Therefore, the highest possible score on each of the 10 items was 5 and the lowest was 1. Example items included “The outcomes of design are measurable” (Item 1) and “Compliance with a set statement of quality parameters will improve the outcomes of design” (Item 9). In cases where more than one answer was appropriate, the participant was asked to choose the one that they most closely identified with or where this alternative choice was not possible to choose the highest number in the group.

Participants for Quantitative Analysis

The design school sample consisted of 53 university design school academics employed during the second semester of 2007, first semester of 2008 and first semester of 2009. The sample included 44.9 per cent females and 55.1 per cent males (n = 53). Of the 53 university design school academics, 10 nominated more than one role. These were treated as above.

Figure 6. Respondents – design school participation
Six participants delivered multiple responses to the question on page 5 for background information “design school” participation (see Figure 6). As a weighting of this item would not have been possible, equal weighting was given to each item nominated. Therefore, respondent 34 who identified four design areas was allocated .25 against each designated school. On viewing the results, it was deemed unnecessary to alter this decision, as the outcome bore no significant change to the outcome of the data analysis. Respondents in communication design and architecture represented 44.7 per cent of the design field sample with 23.2 and 21.4 per cent respectively. All fields in the survey were represented. Interaction Design, Ceramics, Design, Design History and Theory and Art History were nominated in the “Other field” section (See Figure 7).
No participants reported having an expert knowledge of quality frameworks, with 6.1 per cent stating they had an advanced knowledge and the remaining 93.9 per cent fairly evenly spread over the categories of novice, elementary, intermediate and no experience (See Figure 8).

Figure 8. Respondents – experience with quality frameworks

The gender breakdown of responses showed that females had the greatest representation in the no experience level; however, greater participation was reflected in the intermediate and advanced levels.

Participants for Qualitative Analysis

The DSRQFL includes the same quantitative component as the 10-item questionnaire developed for the DSRQFT with four open-ended questions at the conclusion of the quantitative section. The DSRQFL seeks the same biographic data as the DSRQFT. Participants were sought from universities that offer design research through a dedicated design faculty. In total, 31 respondents participated. Of those surveyed, the same initial 10 questions were issued; therefore, the respondents to the DSRQFT have been included in these numbers for analysis of responses.
The four additional questions asked were: i) What does design mean to you? ii) How do you measure the elements that make up design? iii) Define quality and iv) Why do universities do research? What is the ultimate goal?

The 31 respondents were asked these four open-ended questions via an online questionnaire. As stated above, this was a planned strategy to overcome the potential for interview bias. As in the DSRQFT, this questionnaire had the same thank you and comments question at the conclusion to the questionnaire.

To support conclusions drawn in Chapter 7, face-to-face responses were sought from persons within the aged care sector. In particular, the director of nursing from one of the largest facilities in Australia and the care manager from another unrelated facility. Also interviewed was the chief executive officer of one of the largest aged care providers in Australia. For these interviews, the techniques adopted were consistent with the principles and procedures outlined for social research (de Vaus, 1992).

Reliability

To assess the statistical reliability of the DSRQFT questionnaire, an initial test sample of 15 researcher/tutors (six males and nine females) from various Australian public universities and business professionals who worked with quality assurance were employed. A Cronbach’s Alpha was used to measure the questionnaire’s internal consistency to answer the researcher’s question of whether the test is reliable. Ideally, a Cronbach Alpha coefficient for a questionnaire should be above .700 (T. P. Hogan, 2007); however, as Cronbach Alpha values are sensitive to the number of items in the scale, with short scales (ten items or less) it is standard to report low Cronbach values of .500 (T. P. Hogan, 2007). For the reliability analysis, Cronbach’s Alpha (Appendix i) was selected because it can assess both the variance within the items and the covariance between a particular item and any other item on the scale (T. P. Hogan, 2007).

Overall, item consistency was strong with Cronbach’s Alpha = 0.708 indicating that the test participants were responding to the items consistently and reliably. A low value on Item 9 ($r = -0.129$) revealed that a Cronbach’s Alpha of .772 and Item 2 ($r = -0.517$)
revealed that a Cronbach’s Alpha of .805 could be achieved if either item was removed (See Appendix i). Due to the strong internal consistency of the DSRQFT questionnaire and length of the test, these items remained.

Materials

Academics volunteered to participate in the research project after ethical approval was gained. Additionally, they were invited (via an interview letter) to complete a 30-minute quantitative quality framework themed questionnaire (see Appendix g). The DSRQFT questionnaire sought responses in two ways: initially, it was sent to 200 design school academics at universities offering design in 2007. Due to a fairly insignificant mail response of 22 respondents, it was decided to send the questionnaire through an online survey tool, SurveyMonkey.com. The link, http://www.surveymonkey.com/s.aspx?sm=h0aBexMqqxm8QELFpJ8ZEw_3d_3d was sent via email to 100 design school academics, resulting in 31 respondents.

Participants completed one DSRQFT or DSRQFL questionnaire to test for the impact of quality assurance on the product of design. Participants were selected for either questionnaire depending on how they met the following criteria of whether they were an academic participating in a university design discipline in the second semester of 2007, the first semester of 2008 or the first semester of 2009.

The DSRQFT and DSRQFL questionnaires developed for this research are either a survey of 10 or 14 items respectively and were designed to identify the impact of quality assurance on the product of design. The questionnaires were purposefully constructed to answer separate questions with regard to quality assurance; the responses were not designed to measure a single construct nor were they constructed of multiple factors to test a single construct. These responses could be presented in a quantitative or qualitative format. Following the principles and procedures of scale development (T. P. Hogan, 2007), the DSRQFT and DSRQFL questionnaires were developed based on the research of pre-existing quality frameworks as outlined in Chapter 3.
The DSRQFT questionnaire was administered in written format and took participants approximately 30 minutes to complete. The DSRQFT questionnaire was scored by totalling the items for each set of responses; in addition to this, participants were asked a small set of biographical questions regarding their gender, profession and quality framework experience. To aid in the process of dummy coding of categorical (e.g. male = 0, female = 1), data frequency tables were utilised.

The DSRQFL took participants between 35 and 60 minutes to complete. The questionnaire was administered in electronic format with the researcher seeking responses to the same 10 questions as asked in the DSRQFT and four open-ended questions (see above) to design school academics. Added to this data was the qualitative data issued by respondents to the DSRQFT and DSRQFL questionnaire in response to the comments question at the conclusion of the questionnaire.

**Design**

This study employed a pre-experimental design for description that can provide data for monitoring and evaluating policies and programs (California State University L. B., 2009). This design was concerned with questions that sought responses to them that would fit within answers such as: i) How appropriate? ii) How efficient? iii) How effective? and iv) How adequate?

The target population was specifically chosen to test for individuals whose design experience was an essential component of their role. This was necessary to understand the impact on design of a quality framework. The estimated sample size was based on the hypothesis that design school academics did not have sufficient experience with quality frameworks to reasonably understand the impact of quality assurance programs on the product of design.

**Procedures**

Ethical approval was both sought and gained through the Swinburne University of Technology’s Research Ethics Committee. Following this, design school academics were asked to participate in this research project. Participants were sent either the DSRQFT
or the DSRQFL questionnaires depending on the set criteria for selection. Academics were recruited via mail and email. The recruitment set-up encouraged only interested people to participate in the data collection.

Data was collected via paper and pencil and electronic assessments. An explanatory statement attached to the front of each assessment and the link to the electronic questionnaire reminded participants that their contribution would remain anonymous. In addition, details were provided regarding what the study was about and the storage of the assessments over the required five-year period. A respondent consent form was also attached to the paper-based questionnaire. The email with the survey link contained the following text: Consent for participating in the research project of Dianne Summons. Please find attached to this email an "Invitation to Participate in Questionnaire", letter and a link to SurveyMonkey with regard to the above question. Completion of the survey for the purpose of this research; will be taken as your consent to participate in the questionnaire for this project and your authorisation for the researcher or her assistant to use the completed questionnaire or interview to complete her research.

Upon completion, envelopes were provided to seal completed DSRQFT responses and the executed letter of consent. These assessments were returned to the research department via this stamped addressed envelope.

Results

Quantitative

The statistical package SPSS (version 15.0) was used to confirm any potential data violations. Means and standard deviations were within the expected range and bivariate scatter plots revealed data linearity (see Appendix h). Box plots revealed two outliers for the variable DSP, which is indicative of the smaller representation of high status academic position within the academic sample.

A Microsoft Excel database was created with data input from the researcher. This allowed for reviewing the data input for accuracy and enabled analysis by percentage
and filtering against the background demographics of the questionnaires. Percentages were taken to the first decimal place. Where rounding was necessary, it was applied to the per cent closest to the .5 cut-off either positive or negative. This occurred on four occasions but did not materially affect the outcomes of the questionnaire. Using this database, the results of the DSRQFT are as follows (see Table 11).

This table illustrates each response at a percentage rate, as well as the aggregated agree and disagree results. Areas of significance include responses to: Question 1: *The outcomes of design are measurable,* Question 4: *Design elements can be measured within a quality framework,* Question 6: *Quality frameworks limit innovation* and Question 8: *Quality frameworks ensure that levels of excellence are met.* These questions are examined in more detail below.
Table 11. Quantitative questions percentage responses

<table>
<thead>
<tr>
<th>Question</th>
<th>Totally disagree</th>
<th>Partially disagree</th>
<th>Neither agree nor disagree</th>
<th>Partially agree</th>
<th>Totally agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>The outcomes of design are measurable</td>
<td>3.8</td>
<td>11.3</td>
<td>7.6</td>
<td>54.7</td>
<td>22.6</td>
</tr>
<tr>
<td>Quality frameworks ensure the measurement of design by informed practitioners</td>
<td>3.8</td>
<td>22.6</td>
<td>26.4</td>
<td>43.4</td>
<td>3.8</td>
</tr>
<tr>
<td>Quality frameworks have the ability to measure design accurately</td>
<td>15.1</td>
<td>30.2</td>
<td>13.2</td>
<td>37.7</td>
<td>3.8</td>
</tr>
<tr>
<td>Design elements can be measured within a quality framework</td>
<td>3.8</td>
<td>22.6</td>
<td>13.2</td>
<td>45.3</td>
<td>15.1</td>
</tr>
<tr>
<td>Design is poorer because of the need to comply with quality frameworks</td>
<td>11.3</td>
<td>24.5</td>
<td>39.6</td>
<td>20.8</td>
<td>3.8</td>
</tr>
<tr>
<td>Quality frameworks limit innovation</td>
<td>13.2</td>
<td>17.0</td>
<td>18.9</td>
<td>45.3</td>
<td>5.6</td>
</tr>
<tr>
<td>Designers have to meet the conventions of their design discipline to produce a finished product</td>
<td>20.8</td>
<td>17.0</td>
<td>18.9</td>
<td>35.8</td>
<td>7.5</td>
</tr>
<tr>
<td>Quality frameworks ensure that levels of excellence are met</td>
<td>13.2</td>
<td>43.4</td>
<td>17.0</td>
<td>20.8</td>
<td>5.6</td>
</tr>
<tr>
<td>Compliance with a set statement of quality parameters will improve the outcomes of design</td>
<td>5.7</td>
<td>26.4</td>
<td>32.0</td>
<td>32.1</td>
<td>3.8</td>
</tr>
<tr>
<td>Quality frameworks increase the excellence of design</td>
<td>7.5</td>
<td>22.6</td>
<td>45.4</td>
<td>22.6</td>
<td>1.9</td>
</tr>
<tr>
<td><strong>Cumulative</strong></td>
<td><strong>15.1</strong></td>
<td><strong>77.3</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cumulative</strong></td>
<td><strong>26.4</strong></td>
<td><strong>47.2</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cumulative</strong></td>
<td><strong>45.3</strong></td>
<td><strong>41.5</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cumulative</strong></td>
<td><strong>26.4</strong></td>
<td><strong>60.4</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cumulative</strong></td>
<td><strong>35.8</strong></td>
<td><strong>24.6</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cumulative</strong></td>
<td><strong>30.2</strong></td>
<td><strong>50.9</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cumulative</strong></td>
<td><strong>37.8</strong></td>
<td><strong>43.3</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cumulative</strong></td>
<td><strong>56.6</strong></td>
<td><strong>26.4</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cumulative</strong></td>
<td><strong>32.1</strong></td>
<td><strong>35.9</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cumulative</strong></td>
<td><strong>30.1</strong></td>
<td><strong>24.5</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Question 1: The outcomes of design are measurable reflected that 3.8 per cent totally disagree with the statement; 11.3 per cent partially disagree; 7.6 per cent neither agree nor disagree; 54.7 per cent partially agree and 22.6 per cent totally agree (see Figure 9).
Figure 9. The outcomes of design are measurable

Question 2: Quality frameworks ensure the measurement of design by informed practitioners reflected that 3.8 per cent totally disagree with the statement; 22.6 per cent partially disagree; 26.4 per cent neither agree nor disagree; 43.4 per cent partially agree; while 3.8 per cent totally agree.

Figure 10. Design elements can be measured within a quality framework

The results from Question 3: Quality frameworks have the ability to measure design accurately identified that 15.1 per cent totally disagree; 30.2 per cent partially disagree; 13.2 per cent neither agree nor disagree; 37.7 per cent partially agree and
3.8 per cent totally agree. Question Four: *Design elements can be measured within a quality framework* showed that 3.8 per cent totally disagree with the statement; 22.6 per cent partially disagree; 13.2 per cent neither agree nor disagree; 45.3 per cent partially agree and 15.1 per cent totally agree (see Figure 10).

Question 5: *Design is poorer because of the need to comply with quality frameworks* depicts that 11.3 per cent totally disagree with the statement; 24.5 per cent partially disagree; 39.6 per cent neither agree nor disagree; 20.8 per cent partially agree and 3.8 per cent totally agree.

![Figure 11. Quality frameworks limit innovation](image)

Of the respondents of Question 6: *Quality frameworks limit innovation*, 13.2 per cent totally disagree with the statement; 17.0 per cent partially disagree; 18.9 per cent neither agree nor disagree; 45.3 per cent partially agree and 5.6 per cent totally agree (see Figure 11).

Question 7: *Designers have to meet the conventions of their design discipline to produce a finished product* reflected that 20.8 per cent totally disagree with the statement; 17.0 per cent partially disagree; 18.9 per cent neither agree nor disagree; 35.8 per cent partially agree and 7.5 per cent totally agree.
In responding to Question 8: *Quality frameworks ensure that levels of excellence are met*, (see Figure 12) the results suggested that 13.2 per cent totally disagree with the statement; 43.4 per cent partially disagree; 17.0 per cent neither agree nor disagree; 20.8 per cent partially agree and 5.6 per cent totally agree.

Figure 12. Quality frameworks ensure that levels of excellence are met

The results from Question 9: *Compliance with a set statement of quality parameters will improve the outcomes of design* showed that 5.7 per cent totally disagree; 26.4 per cent partially disagree; 32.0 per cent neither agree nor disagree; 32.1 per cent partially agree and 3.8 per cent totally agree. Question 10: *Quality frameworks increase the excellence of design* resulted in 7.5 per cent reflecting total disagreement; 22.6 per cent partially disagree; 45.3 per cent neither agree, nor disagree; 22.6 per cent partially agree and 1.9 per cent totally agree.

A filter was applied to the above data for Questions 1–10 and applied against the biographical data shown above to enable closer examination of responses against the biographical information. To gain clarity with regard to the respondents’ experience with quality frameworks, data collected was separated into three categories: little to no experience, mid-level experience and high levels of experience. No respondents identified themselves as experts with regard to quality frameworks; however, 46.9 per cent of the respondents stated that they held no level of experience or that they were
a novice in the area. Closer examination of the data reflected that these respondents held the following academic positions in the design fields as designated (see Figure 13).

Figure 13. No experience and novice experience with quality frameworks

The 46.9 per cent who identified themselves as having elementary and immediate experience were holding the following academic positions in the design fields as designated (see Figure 14).

Across their varying levels of experience from professor to research assistant, the respondents from architecture were inexperienced when compared with other disciplines, as 30 per cent had no experience; 20 per cent were at a novice level and 50 per cent held an elementary level. Communication design had a similar sample size; however, a high level of intermediate experience with quality frameworks was stated.

All of the respondents from multimedia design had some experience with quality frameworks whereas graphic design reflected either no experience or novice levels only. All other disciplines recorded a positive level of experience.
Figure 14. Elementary and intermediate experience with quality frameworks

The respondents who stated that their quality framework experience was advanced included a senior lecturer, a deputy dean and a manager and were in the digital media, design and design history disciplines.

Another area that offers clarity to the data was an analysis of those academic positions with higher representation. In this case, I was interested to see whether there was a significant shift in response between the data for all of the respondents, as shown above, and the response of the lecturers to the Questions 1–10 (see Figure 15).

The final filter applied to the quantitative questionnaires focused on possible differences of response to each question given the individual self-assessed level of experience with quality frameworks.
In this analysis, I have combined the intermediate and advanced level, as the advanced level would have had a greater weighting than warranted given the small number of respondents in this group.

Figure 15. The lecturers’ quantitative responses to the 10 questions

The result of this combination of experience levels, were categories that included the following respondent numbers: none 22.4 per cent, novice 24.5 per cent, elementary 24.5 per cent and the combined group of intermediate and advanced of 28.6 per cent. Responses were tabulated as a percentage and bar charts were created for comparison.

In Figure 16, the strong positive response to the statement that the outcomes of design are measurable, regardless of their levels of experience with quality frameworks, are reflected by the vast majority depicting their total and partial agreement. Also of note is the low level of, neither agree nor disagree, response to this question by all categories with the categories of None and Elementary being the only ones represented.
Neither did the none nor the intermediate and advanced respondents totally disagree with this statement. For each level of experience 75 per cent or higher responded positively.

Figure 16. The outcomes of design are measurable, responses by level of experience with quality frameworks

In Figure 17, the statement: *Quality frameworks ensure the measurement of design by informed practitioners*, demonstrated that the high level of totally disagree by the intermediate–advanced group is noteworthy given the lack of partially disagree and the high level of agreement.

The group with no experience has a similar level of partial agreement to the other three categories; however, they have a slightly less degree of partial disagreement. The two least experienced groups have no representation in the totally agree category.
Figure 17. Quality frameworks ensure the measurement of design by informed practitioners.

Figure 18. Quality frameworks have the ability to measure design accurately.

In Figure 18: Quality frameworks have the ability to measure design accurately; the novice group indicate a high level of partial agreement with the only representation in
the total agreement category being the intermediate–advanced group at 53.8 per cent reflecting the same percentage of agreement as the novices. At 41.7 per cent, the elementary group have the same level of agreement as disagreement.

Design elements can be measured within a quality framework (see Figure 19) as reflected by the endorsement of this idea by all participating groups, at 69.2 per cent agreement, the novice group has the highest response with no experience; the intermediate–advanced closely following at 63.6 per cent and 61.5 per cent respectively; while the elementary group indicate a 50 per cent agreement rate. While the novice group indicated the highest overall positive response, this was due to a large participation in the partial agreement, whereas the intermediate–advanced group held the highest participation in the totally agree category. Of interest is that the elementary group reflected no “total disagreement” and are otherwise fairly even across the remaining categories.

Figure 19. Design elements can be measured within a quality framework

In the response to the question of whether design is poorer because of the need to comply with quality frameworks (see Figure 20) all groups have a high level of either agreement or disagreement.
Figure 20. Design is poorer because of the need to comply with quality frameworks

In Figure 21, both the no experience and novice groups were shown at 54.5 per cent and 61.5 per cent respectively, indicating that quality frameworks limit innovation. Furthermore, the no experience group depicted a 27.3 per cent neither agreement nor disagreement with the statement that quality frameworks limit innovation.

Other responses to the question were mixed with the intermediate–advanced response being almost equally divided; while the elementary group were fairly evenly split with a slightly higher disagreement, although they had the most significant total agreement at 33.3 per cent and a high percentage (25.0 per cent) neither in agreement nor disagreement.
Figure 21. Quality frameworks limit innovation

Figure 22. Designers have to meet the conventions of their design discipline to produce a finished product

In Figure 22, the concept that designers have to meet the conventions of their design discipline to produce a finished product depicted a lack of agreement by the no experience group and a high level of respondents neither agreeing nor disagreeing.
with 63.6 per cent in this category. The intermediate–advanced group achieved a majority of agreement at 53.8 per cent; however, they had a disagreement factor of 46.2 per cent. The elementary group had 50 per cent agreement with the rest of their results equally spread over the totally disagree, partially disagree and the neither agree/disagree categories.

Figure 23. Quality frameworks ensure that levels of excellence are met

Figure 23 highlights the scepticism that respondents felt about the statement that quality frameworks ensure that levels of excellence are met. At 50.0 per cent disagreement, the elementary group were the lowest negative respondents; however, they did reflect a high 25.0 per cent neither agree/disagree quotient. The intermediate–advanced group disagree with 53.8 per cent; those with no experience disagree with 54.5 per cent and 69.2 per cent of novices disagree. At 23.1 per cent, the intermediate–advanced sample had the highest level of totally disagree. Elementary had a fairly even spread across the four categories from partially agree to totally disagree with no responses in the totally agree category.
Figure 24. Compliance with a set statement of quality parameters will improve the outcomes of design

The results evident in Figure 24 indicate that the intermediate–advanced group (at 61.5 per cent) are the only group who positively agree with the statement that compliance with a set statement of quality parameters will improve the outcomes of design. They are the only group who totally agree and are the largest group to partially agree with the statement. In contrast, the novice group of respondents showed a 53.8 per cent disagreement and those with no experience reflected a 45.5 per cent degree of neither agreement nor disagreement.

The elementary group recorded 41.7 per cent, 25.0 per cent and 33.3 per cent across the partially disagree, neither agree/disagree and the partially agree categories respectively, showing neither a strong agree or disagree recording.

The last question in the 10-part questionnaire: *Quality frameworks increase the excellence of design*, resulted in the highest level of neither agreement nor disagreement in this work.
Figure 25. Quality frameworks increase the excellence of design

The results (evident in Figure 25) illustrate that the intermediate–advanced group with 53.8 per cent agreement and 46.2 per cent disagreement were the only group who neither agree nor disagree. With 69.2, 63.6 and 50 per cent respectively for those with no experience, novices and elementary neither agreeing or disagreeing with this statement the only other result of importance is the 33.3 per cent partial agreement that is held by the elementary group.

**Qualitative**

As with the quantitative questionnaire, a Microsoft Excel database was created with data input from the researcher for qualitative responses. This allowed for the observation of the data input for accuracy and enabled analysis by percentage and filtering against the biographical data of the questionnaires. Seventeen respondents answered the DSRQFL questions: i) What does design mean to you? ii) How do you measure the elements that make up design? iii) Define quality and iv) Why do universities do research, what is the ultimate goal?
The data collected in response to these questions were coded to identify matching words and themes. Where an answer had a number of possible outcomes each of these were coded and given equal weight to all other answers. For example, if one respondent provided one answer, this was given a measure of one for data analysis. Where a respondent gave five points within one answer, each was measured as having a value of one for data analysis, giving a total of five points recorded. Respondent 26 wrote when addressing the question, What does design mean to you? “. . . plans to make things . . . design as a discipline is a bigger thing encompassing practice, education and research” (26). In this case, I coded discipline, practice, education, research and plan. Therefore, each question will have a different potential number of responses as the depth of the answer determined these.

**What does “design” mean?**

On analysing the responses for the question regarding what “design” means, 64.7 per cent of all respondents (see Table 12) thought that design was purposeful. In this context I have taken purposeful to mean the purpose or reason for doing something; this purpose is determined and the outcome resolves the initial requirement. As one respondent wrote, “design . . . produces outcomes directly applicable to their users” (27), while another suggested “. . . products that serve human beings in the accomplishment of their individual or collective purposes” (32). Over half of the respondents stated that design was inventive in that a product was created. Respondent 50 wrote, “Design is an art of thinking and producing that brings differences together in order to create a product or service that enhances the human experience” (50). I coded “create” and “creativity” separately as the respondents used the terms in different contexts. Responses coded as creativity, included those similar to “Design is making good use of creativity” (30), “An applied process of intuitive and creative thinking” (42). Responses included in the create coding included those that specified to plan or create an outcome “create artefacts to facilitate human potential” (47). After application of these distinctions to the coding, 17.6 per cent of the respondents stated that design has as an element, creativity, while 52.9 per cent responded that it created an outcome.
Table 12. What does design mean to you?

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Percentage of respondents who identified the attribute</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purposeful</td>
<td>64.7%</td>
</tr>
<tr>
<td>Create</td>
<td>52.9%</td>
</tr>
<tr>
<td>Perceived improvement</td>
<td>41.2%</td>
</tr>
<tr>
<td>Practice</td>
<td>23.5%</td>
</tr>
<tr>
<td>Plan</td>
<td>23.5%</td>
</tr>
<tr>
<td>Meets specific criteria</td>
<td>23.5%</td>
</tr>
<tr>
<td>Creativity</td>
<td>17.6%</td>
</tr>
<tr>
<td>A mindset</td>
<td>11.8%</td>
</tr>
<tr>
<td>Education</td>
<td>11.8%</td>
</tr>
<tr>
<td>Conceive</td>
<td>11.8%</td>
</tr>
<tr>
<td>Makes sense</td>
<td>11.8%</td>
</tr>
<tr>
<td>Multi-faceted</td>
<td>11.8%</td>
</tr>
<tr>
<td>Problem-solving</td>
<td>11.8%</td>
</tr>
<tr>
<td>Human function</td>
<td>5.9%</td>
</tr>
<tr>
<td>A discipline</td>
<td>5.9%</td>
</tr>
<tr>
<td>Research</td>
<td>5.9%</td>
</tr>
<tr>
<td>Exciting</td>
<td>5.9%</td>
</tr>
<tr>
<td>Synthesis of existing ideas</td>
<td>5.9%</td>
</tr>
</tbody>
</table>

While 41.2 per cent of respondents thought that design would initiate a perceived improvement, 23.5 per cent stated that design is a practice that involved planning for and the meeting of specific criteria to achieve an outcome.

The responses to “what does design mean to you?” were varied with 18 different codes identified. It was apparent that while there were some overarching themes, each respondent offered something personal and unique to the discussion.

After considering the responses and the percentages applied, I propose that the sample of design school academics advocate that, for them, design was a practice that
results in the creation of purposeful artefacts that meet specific criteria through planning.

**How do you measure the elements that make up design?**

With 17 codes, the responses were more evenly dispersed than with that of Question 1. 35.3 per cent of respondents wrote that to either meet market needs; to be useful or to ensure user response were the most significant means of measurement of the elements of design to them. The meeting of professional standards was also important to 29.4 per cent of respondents with the impact of the socio economic environment, desirability, or fit for purpose being equally important to 23.5 per cent of respondents.

Table 13. How do you measure the elements that make up design?

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Percentage of respondents who identified the attribute</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meet market needs</td>
<td>35.3%</td>
</tr>
<tr>
<td>Useful</td>
<td>35.3%</td>
</tr>
<tr>
<td>User response</td>
<td>35.3%</td>
</tr>
<tr>
<td>Professional standards</td>
<td>29.4%</td>
</tr>
<tr>
<td>Socio-economic environment</td>
<td>23.5%</td>
</tr>
<tr>
<td>Desirability</td>
<td>23.5%</td>
</tr>
<tr>
<td>Fit for purpose</td>
<td>23.5%</td>
</tr>
<tr>
<td>Cannot be measured</td>
<td>23.5%</td>
</tr>
<tr>
<td>Usability</td>
<td>17.6%</td>
</tr>
<tr>
<td>As a whole</td>
<td>17.6%</td>
</tr>
<tr>
<td>Reliability</td>
<td>17.6%</td>
</tr>
<tr>
<td>Provide fun and enjoyment</td>
<td>11.8%</td>
</tr>
<tr>
<td>Research</td>
<td>11.8%</td>
</tr>
<tr>
<td>Return on investment</td>
<td>5.9%</td>
</tr>
<tr>
<td>Framework</td>
<td>5.9%</td>
</tr>
<tr>
<td>Individual elements</td>
<td>5.9%</td>
</tr>
</tbody>
</table>
A number of respondents (25.0 per cent), wrote that measuring design was impossible; however of these respondents, all but one made some attempt to make an answer, although it was clear that there responses were not based in a confident belief of the ability to measure the elements that make up design. Again, the idea of subjectivity was raised with one respondent (see Table 13) stating “in my practice, measurement (though I wouldn’t use that word) is subjective, as the quality and success of a design is subjective” (37).

A recurring theme in the responses to this question was the identification of the need to meet appropriate human responses as evidenced by the three most important measurement tools reflected. The need to view the designed object as a whole was argued in a number of cases and the need to exclusively examine the elements was also raised. Fit for purpose appeared understated; however, if meet market needs, usefulness and reliability were attributed to this category, then fit for purpose would have been the most significant metric. I have preferred to isolate these criteria, as I believe that they offer differences in meaning.

Given the responses, an answer to the question “How do you measure the elements that make up design?” would be “elements inherent in an artefact that responds to human needs and successfully meets these through the realisation of appropriate professional standards”.

**Define quality**

To answer this question, the respondents explored quality from two distinct perspectives (see Table 14): in the first instance, what quality means as an attribute and secondly, how quality is evidenced in outcomes. With 17 identified codes, it becomes clear that the concept of design being one of excellence and simplicity is more about inherent attributes than perceived outcomes; although I do concede that to understand that design is excellence would require and understanding of the excellence of the design.

Meeting objectives if the designed artefact was stated to be important by 47.1 per cent of the respondents as reflected in the statement: “successfully achieving the required objectives through thorough design research” (25) while another stated, “quality of a
product is the ability to achieve the goal of the product” (30). 29.4 per cent wrote that the success of a product was a measure of its quality. In a similar vein were performance and functionality, also deemed to be an important measure when defining quality by 29.4 per cent of respondents. As with Question 2, a number of respondents stated that quality could not be defined; while two respondents argued that it was a human construct as argued with the response: “something that is socially constructed and mutually agree” (40).

Table 14. Define quality

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Percentage of respondents who identified the attribute</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meeting objectives</td>
<td>47.1%</td>
</tr>
<tr>
<td>Successful</td>
<td>29.4%</td>
</tr>
<tr>
<td>Performance</td>
<td>29.4%</td>
</tr>
<tr>
<td>Functionality</td>
<td>29.4%</td>
</tr>
<tr>
<td>Desirable</td>
<td>17.6%</td>
</tr>
<tr>
<td>Best solution</td>
<td>17.6%</td>
</tr>
<tr>
<td>Cannot be defined</td>
<td>17.6%</td>
</tr>
<tr>
<td>Simplicity</td>
<td>11.8%</td>
</tr>
<tr>
<td>Excellence</td>
<td>11.8%</td>
</tr>
<tr>
<td>Human construct</td>
<td>11.8%</td>
</tr>
<tr>
<td>Attention to detail</td>
<td>5.9%</td>
</tr>
<tr>
<td>Useful</td>
<td>5.9%</td>
</tr>
<tr>
<td>Cannot be improved upon</td>
<td>5.9%</td>
</tr>
<tr>
<td>Repeatability</td>
<td>5.9%</td>
</tr>
<tr>
<td>Sustainable</td>
<td>5.9%</td>
</tr>
</tbody>
</table>

Responses that summarised a number of comments as part of responses to other questions were, “Greatness that cannot be measured, but you know it is there” (45), and an outcome or artefact that “is a solution or end result that cannot be improved” (36).
Other attributes such as sustainability, repeatability, desirability and simplicity were mentioned. Interchangeable adjectives such as excellence and superior were also used in the responses. A summation of how the respondents defined quality would be: “the best solution for the successful meeting of objectives as evidenced by performance, desirability and functionality”.

**Why do universities do research? What is the ultimate goal?**

When answering the questions: Why do universities do research? and What is the ultimate goal? 52.9 per cent (see Table 15), of the respondents’ answers reflected the theme of increasing global knowledge. Furthermore, they believe it was “to generate and share new knowledge with the world” and 52.9 per cent also identified the need to provide innovation. In response to these questions, one respondent wrote, “Why do they or why should they? The universities should be seeking to constantly raise the bar of professional practice” (25). This was a sentiment shared by many; as to increase professional practice was considered important by 41.2 per cent of the respondents.

Table 15. Why do universities do research? What is the ultimate goal?

<table>
<thead>
<tr>
<th>Theme</th>
<th>Percentage of respondents who identified the theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase global knowledge</td>
<td>52.9%</td>
</tr>
<tr>
<td>Innovation</td>
<td>52.9%</td>
</tr>
<tr>
<td>Increase professional practice</td>
<td>41.2%</td>
</tr>
<tr>
<td>Educating</td>
<td>17.6%</td>
</tr>
<tr>
<td>Industry leadership</td>
<td>11.8%</td>
</tr>
<tr>
<td>Publishing and conferences</td>
<td>5.9%</td>
</tr>
<tr>
<td>Improve the world</td>
<td>5.9%</td>
</tr>
</tbody>
</table>

The last question addressing the purpose of research generated the smallest number of identified variables with only seven codes. Few respondents felt that universities did research as a branding or marketing response; rather 11.8 per cent identified industry leadership as the significant factor, “Ultimately, the goal is to build the brand of the
university through its accomplishments and contributions to the academic community and the world” (36). This issue has already been expanded upon earlier in Chapter 4.

In addressing why universities do research and their ultimate goal (see Table 15), the respondents wrote that: “the ultimate goal of research in universities is to be innovative, to educate, to contribute to global knowledge while increasing the standard of professional practice”.

**Discussion**

Data collected from the qualitative and quantitative sample included 12 levels of academic responsibility within universities from tutors to dean, across 15 design fields. Of the respondents, there were approximately 9.0 per cent more males that participated than females, with levels of experience from those with no experience to those with advanced experience. Interestingly, there were no respondents that identified themselves in the expert category for experience with quality frameworks.

In examining the 10 questions, a majority agree that: the outcomes of design are measurable. In addition, quality frameworks ensure the measurement of design by informed practitioners. Design elements, can be measured within a quality framework, however, quality frameworks limit innovation. Designers must meet the conventions of their design discipline to produce a finished product and compliance with a set statement of quality parameters will improve the outcomes of design.

A majority of the respondents disagree that quality frameworks have the ability to measure design accurately and quality frameworks ensure that levels of excellence are met. The majority neither agree nor disagree that design is poorer because of the need to comply with quality frameworks and that quality frameworks increase the excellence of design; however, in the data from the remaining majority (with those indifferent to the statement excluded), the majority did not agree with these statements.

The majorities in some cases were small; however, the most significant responses were the positive reactions to Question 1: the outcomes of design are measurable; to Question 4: Design elements can be measured within a quality framework; and to
Question 6: designers have to meet the conventions of their design discipline to produce a finished product. This was in stark contrast to the strong negative response to Question 8 that suggests quality frameworks ensure that levels of excellence are met.

An important outcome of this research is that the majority of respondents, that is university design school academics and those who work for and in the discipline daily, believe that the outcomes of design are measurable. This question reflected a high positive response rate with 54.7 per cent partially agreeing and 22.6 per cent totally agreeing, giving a positive aggregate of 77.3 per cent as opposed to a disagreement aggregate of 15.1 per cent with 3.8 per cent in total disagreement and 11.3 per cent partially disagree. This question also resulted in the lowest number (at 7.6 per cent) who neither agree nor disagree with the statement. These results, when compared with all other questions, reflected the lowest percentage of disagreement and the highest percentage of respondents in agreement. As a question the concept that the outcomes of design are measurable also received the most even response, with 75.0 per cent of participants with self-assessed levels of experience with quality frameworks responding.

Qualitative responses to this question raised the issue of the subjectivity of perceptions of design and the problems associated with actual measurement, as this in itself is a human construct. This was a theme adopted by several respondents, as was the argument that design could not be measured at all. Other respondents believe that design could be measured but explained that this must be against specific criteria and that these criteria must also be explicit. One respondent was concerned that as quality was an unknown factor, the ability to measure it was equally illusive. As an expectation, respondents raised the opportunity for measurement against a brief or requirement of the design outcome.

It is interesting to compare these results with the lack of faith shown in quality frameworks’ capacity to deliver that measurement (See Chapter 4). In applying a filter to the results, the following items were noteworthy. Those with an intermediate and advanced level of expertise with quality frameworks included many at the senior levels of academic and university management personnel, such as a director, a deputy dean,
a manager, a senior lecturer/program manager and senior lecturers. This group either totally or partially agree with the statement that the outcomes of design are measurable depicting an aggregated total of 92.3 per cent. Therefore, those operating from a medium to high level of understanding of quality frameworks and arguably, significant academic experience agree with this statement either partially or totally.

As I have argued that quality frameworks are defined by measurement and compliance to standards, this is an important result. It indicates that those who are most likely to have an effect on university policy and future practices with regard to quality frameworks are operating with the belief that measurement is possible.

While most of the respondents felt that the outcomes of design are measurable, only 47.2 per cent agree that quality frameworks would ensure the measurement of design by informed practitioners. Of the respondents, 43.4 per cent believed this was likely to a partial extent and 3.8 per cent completely. The advanced practitioners were the significant group who totally disagree with this statement consisting of 90 per cent of the sample group. The advanced elementary level of experience constructed 100 per cent of the totally agree and approximately 40 per cent of the partially agree. Those with little or no experience were dispersed across the partially disagree to partially agree with a leaning towards the disagree response. Adding to this data is the qualitative responses that argue strongly against the idea that “one size fits all”.

Comments included the notion that frameworks and professionals within them must be fully attuned and have a sophisticated level of the design field under inquiry to be reliable in measuring the outcomes of design. This is because quality is not discipline-specific and will alter depending on the design field and the impact of the framework upon specific design fields remains largely unknown. One respondent discussed the McDonald’s Model that is McDonald’s quality control and implied quality of their product across the world and how this compares with the best food from the finest restaurant, which often cannot be replicated exactly and therefore cannot maintain quality. The McDonald’s example highlights the issues that exist between quality control and quality when compared with other products of quality in its class.
There is a strong consensus that design can be measured and there is also a high level of agreement that this is possible within a quality framework; however, whether this is achieved by informed practitioners is less positively supported. This then leads to the negative response to the statement that quality frameworks have the ability to measure design accurately with 15.1 per cent nominating that they totally disagree and together with partially agree with the statement totalling 45.3 per cent. When addressing measurement, again our qualitative respondents indicated the intention of the brief and specific criteria to be met to ensure this measurement is accurate. However, the resounding theme of the impact upon the discipline of a quality framework is seen as important to this question; so too the ongoing theme that suggests each discipline has to be viewed separately and not as a whole. Design, these responses highlight, is not understood by partitioners to be one all-encompassing term and is viewed differently across cultures and disciplines.

Given this level of scepticism, it is interesting that 60.4 per cent of respondents believe that design elements can be measured within a quality framework; however, only 35.8 per cent disagree with the idea that design is poorer because of the need to comply with quality frameworks. Once again, our intermediate–advanced experienced group agree and disagree with these two statements respectively. This raises the possibility of design being measured within a quality framework. Therefore, the arguments raised by the qualitative respondents earlier gain currency. They agree that measurement can occur provided criteria for the measurement are explicit, are discipline-specific and work towards meeting the requirements of a brief or instruction. Also reiterated was the point that quality is neither discipline-specific nor is it discipline comparable, that the intention of the measurement must be made clear and prior to outcomes for measurement to be exacted appropriately.

With these results, the response to the next question quality frameworks limit innovation was interesting with only 18.9 per cent neither agreeing nor disagreeing. Of the remainder: 30.2 per cent disagree and 50.9 per cent agree. This raises the question of whether there were patterns across the demographics. The total disagreement and therefore a belief that quality frameworks do not limit innovation arose from the group with design, ceramics, industrial design, communication design, and art history represented. Those groups that agree include architecture and
communication design. For the first time, the advanced experience group had almost equal positive and negative responses. The no experience and novice groups had high levels of partial agreement with this statement, which may be a result of a number of reasons such as lack of understanding of quality processes or perhaps, frustration with having to meet quality standards in their work. The data does not provide these insights.

The next question, designers have to meet the conventions of their design discipline to produce a finished product, I included in the questionnaire as a result of showing the proposed questions to a multimedia designer. This designer told me that irrespective of what occurred with the ARC, AUQA or the ERA, individual design disciplines such as graphic design, architecture and communication design had their own design principles that must be met. I added this question to determine what level of appreciation for this consideration the respondents held. The question, designers have to meet the conventions of their design discipline to produce a finished product, received a mixed response with 43.4 per cent agreeing with the statement and 37.7 per cent disagreeing. A response of 20.8 per cent in total disagreement was the highest response in this field across the questionnaire. However, this response was not reflected as a pattern for the outcome and with an either disagree or agree proportion of 18.9 per cent, it was important to determine what disciplines wavered. On the agree side, there was a high representation from architects, communication design and multimedia design. Given the compliance that architects must meet in their profession, this response seemed appropriate; however, I was surprised by the diverse response from other disciplines; particularly the largely negative response from the industrial designers who it is assumed would have to meet quite rigorous safety standards to complete their work. Because of these findings, it came as no surprise that the qualitative data showed that design conventions are neither universal nor discipline specific, indicating that regulation is not applicable across all design disciplines and in some cases inconsistent within specific disciplines.

Taking all of the prior responses into account, it was hardly surprising to observe that 56.6 per cent of respondents did not agree that quality frameworks ensure that levels of excellence are met with 13.2 per cent totally disagreeing and 26.4 per cent in agreement with this statement. A partial disagreement of 43.4 per cent was the
highest response by more than 13 per cent across the questionnaire. All groups supported partial disagreement; however, the novices reflected over 60 per cent response and the no experience just less than a 50 per cent response in this category, indicating that experience was significant for this question. The intermediate–advanced group reflected an equal partial agreement and disagreement with a higher total in disagreement. Of these, the totally disagree and disagree were distributed across several design fields with a high representation from architecture and slightly less from graphic design. Once again, the qualitative data indicated that as the impact of quality frameworks upon any given design discipline is unknown; therefore, it is most difficult to answer this question with any solid evidence as support.

Compliance with a set statement of quality parameters will improve the outcomes of design and quality frameworks increase the excellence of design was the most evenly responded to statement in the questionnaire with 32.1 per cent disagreeing, 32.0 per cent neither agreeing nor disagreeing and 35.8 per cent agreeing. Given the 10 per cent bias towards male participation than that of females, it was noteworthy that 50 per cent more females than males answered this question that they neither agree nor disagree to the statement. Architecture was equally represented in the partially agree and the partially disagree category. The intention of compliance was questioned in the qualitative responses, as was the subjectivity of possible quality parameters established to do so.

The challenge to as a potential to improve excellence in design was posed by the question: Do quality frameworks increase the excellence of design? This question delivered the highest number of neither agree/disagree across the questionnaire, indicating that there is a poor understanding in design of the fundamental possibilities that quality frameworks offer. The only respondent in total agreement was a female in communication design with an intermediate level of experience with quality frameworks. The totally disagree group was represented by an equal number of males and females from the areas of art history, design, interaction design and digital media, with 75 per cent from the intermediate and advanced level of experience with quality frameworks. Of the partially disagree responses, 18.2 per cent were self-identified as having no experience and a further 18.2 per cent in the novice group. 36.4 per cent
were at the elementary level of experience with quality frameworks and 27.2 per cent
were at the intermediate–advanced level.

The qualitative data contributed to the quantitative responses and raised a number of
questions that would be worthy of future studies. Qualitative responses were also
sought to four questions covering the meaning of “design”, its measurement,
designers’ understanding of the term “quality” and an attempt to understand why
universities do research and for what purpose. The data collected was interesting
because it was provided by a group of design professionals across several design
fields. These professionals had different roles and differing levels of experience with
quality frameworks.

The majority of the responses to the first question of what “design” means stated that
it had to create an artefact or outcome that had a purpose or fulfilled a need; that it
had to improve the present situation and a number of respondents suggested that it
had to improve the world for humanity, with one respondent further voicing a need to
do this for all living things. But how can this be achieved?

In response to how the elements that make up design may be measured, respondents
listed a number of key indicators that many successful quality frameworks would use
as indicators of success. Firstly, that the artefact meets market needs; that it is useful
and in the case of communication design and interaction design, that it elicits a
response from the user. It must also be conscious of the environment and be an
economically and socially responsible solution to a need. Other criteria adhere to the
quality control model that reflects the attributes of usability, reliability and being fit for
purpose. As with most of the other questions, there was the response that design
cannot be measured. However, I argue design it is measured at least informally, if not
formally. Every time a person makes a decision about a design whether in appraisal or
for use, they have measured the object or outcome against their own criteria to form
that response. They will use that same set of criteria when making a judgement about
the next experience they have with the same design outcome. The response of a user
to the artefact or outcome may only develop as a result of time and experience with
like products. This is very similar to the continuous improvement philosophies of
quality frameworks. The difference is that the quality framework is very structured so
that measurement is possible and that elements can be successfully measured against their own capabilities and those of their group to demonstrate outcomes and allow for changes or improvement if warranted.

These arguments are underpinned by the respondents’ own responses to the question of how they define quality. A number of the sample claimed that quality cannot be defined; however, all but with the exception of one, issued a response. Half of the respondents suggested that, for them, quality was the meeting of the objectives of that design in its design, additionally, the ability to successfully meet the expectations of the brief. For artefacts to embody quality it must also have the attributes of being successful, performing, as it should, being functional, desirable and provide the best possible solution. One respondent articulated that as an outcome the result shown should be simple. This was particularly relevant in a personal context, as in quality frameworks I have found that the simplest response to a problem equates to the most elegant solution.

The last question was posed for a very specific reason; when I instigated this work, I questioned the purpose of research. The answer I received from a design school academic and later agreed upon by a number of academics across different disciplines was that the reason Australian universities conducted research, although there were a number of benefits, is to attract international and full fee paying students. The students, it was argued, enrol in particular universities as a result of that university’s ranking; a ranking that was greatly assisted by research. I have already discussed international student numbers in Chapter 4 and the effect of international ranking upon these numbers in Australia; however, it is of interest to consider this from the perspective of the respondents where branding, marketing and industry leadership was only chosen as a valid response by 11.8 per cent, indicating a lack of appreciation of what contributes to reputation that then impacts positively upon student numbers.

Of importance to the respondents (at 52.9 per cent) was the potential to increase world knowledge and to improve global outcomes. Also argued by the 52.9 per cent was that innovation and the discovery of new and improved methods for achieving better outcomes is the reason that universities do research. Almost half of the respondents believed that increased professional practice and the improvement of their
discipline was a significant factor. To a lesser extent, also nominated was the ability to educate. While I have not discounted the 11.8 per cent who have indicated that industry leadership is an important factor, the increase in knowledge is seen as an important indicator in the ERA and will complement the need to demonstrate public good for research dollars spent.

**Summary**

In this chapter I have examined both critical theory and the theory of economic rationalism and have adopted the latter as the best theory to explain the issues raised in this work and as a way of explaining the reliance on quality assurance for meeting government objectives. This will be discussed again in Chapters 7 and 8.

I have weighed the advantages and disadvantages of qualitative and quantitative research and have chosen to integrate a form of both to meet the purpose of this thesis. To overcome the potential of interview bias, I have requested qualitative responses to questions in writing. This has assisted to ensure consistency of request for information and negated the possibility of interviewer bias in face-to-face interviews. However, this technique does not overcome potential analytical bias and misinterpretation of meaning when coding and analysing responses. Because of the possibility of bias, I have kept the resulting variables wide and not sought to narrow them for ease of analysis.

Resulting data was collected from a representative sample of university design academics. This data has overwhelmingly supported the view that university design academics believe that design can be measured. A slightly lesser number believed that design elements could be measured within a quality framework; however, a majority questioned that the frameworks would ensure that levels of excellence were met. This was confirmed with the poor response rate to Question 10: Quality frameworks increase the excellence of design with 45.3 per cent neither agreeing nor disagreeing. The respondents were equally divided with regard to whether frameworks measured Design accurately.
While a majority of university design academics agree that quality frameworks limit innovation, they did not fully support the idea that design is poorer because of the need to comply with quality frameworks or with the idea that compliance with a set statement of quality parameters would improve design outcomes.

The qualitative responses gave breadth to the questions asked and the responses were meaningful and varied. To include every aspect raised in a simple response to the questions is not pragmatic; nor have I desired to trivialise any comments, thus, these have all been coded and accounted for. However, an overview must be adopted and for this purpose I have summarised the collected responses to provide a generic and definitive response.

What does design means to you? “A practice that results in the creation of purposeful artefacts that meet specific criteria through planning.”

How do you measure the elements that make up design? “Elements inherent in an artefact that responds to human needs and successfully meets these through the realisation of appropriate professional standards”.

Define quality: “The best solution for the successful meeting of objectives as evidenced by performance, desirability and functionality.”

And

Why do universities do research? What is the ultimate goal? “The ultimate goal of research in universities is to be innovative, to educate, to grow global knowledge while increasing the standard of professional practice.”

Having established the views of responding design school academics across a range of questions in Chapter 7, I will discuss the way that quality frameworks have been adopted in other areas, specifically the aged care industry. I wish to demonstrate in this chapter that persons working within a sector that is reliant on government funding will increasingly need to involve their policies and practices within a carefully designed and managed quality framework. The reliance on government funding for
undergraduate placements is already the case with Australian universities, and the increasing numbers of international students that are self-funded offsets this to some extent.

This may be a strategy for universities wanting research outcomes; however, to attract research funding under the ERA, compliance and measurement will be strict and, as the overview of the aged care sector will illustrate, will ultimately impact upon the structure of the provider and the structure of the sector as a whole.

As I have argued in Chapter 2, quality is here to stay and when the government is aligning funding with meeting quality metrics then it is reasonable for university design research teams to maximise their potential. If this can have the flow-on of increased levels of design and management excellence, then the cost of implementing quality programs will at least be in part offset.
Part VI: Control
Chapter Seven: Australian Government Funding – The Aged Care Model

... a move from passive monitoring of standards to an active audited regime of continuous improvement (Productivity Commissioner in Campbell Research and Consulting, 2007, p. 22).

Introduction

How have the tools that have been adopted by organisations to ensure quality outcomes, fulfilled the expectations of the economic rationalists? I have found it interesting to observe how humans persistently pursue perfection in the form of continuous improvement. This is especially so in sporting achievements. Runners, for example, must run faster and weightlifters must be stronger. In most cases, triumphing over established records is often viewed as the greater prize than the victory. From this example, two observations prevail: we invariably attach more rules to the activities or feats that we are measuring; and when assessing the “now” we often reflect on the past, as a time when life was better, albeit slower and less structured. However, granted the new rules and the stringent constraints, with time the established record will be superseded and for a time, a new record offered by a new hero will be attached to that activity.

This desire to excel has parallels in the commercial world, the world of professionals and businesses. The impact may very well be, in part, due to the very corporatisation of sporting teams and the commercialisation of the “sports super stars”. I would argue that this is inherent in the need for all human endeavours, regardless of their nature, having the need to compete and to use this competition to reap reward, be it monetary, power or acclaim. We, as consumers and witnesses of corporate competition have become cognisant of the need to be best from the largest corporations through to the small owner–operators in all areas of service, manufacture or product delivery.

In business, differences are not so far removed from the sporting arenas. Just as a sportsperson will endeavour to attract sponsorship and increased salaries due to
excellence, organisations will also seek to transfer excellence into currency via increasing profits and market share resulting from their earned competitive advantage. Organisations will seek to produce a better car, a better PhD, the better front desk and in fact, better all-encompassing deliverables of every endeavour that look to have an advantage through competition with like or substitute products.

Given the complexity of business, the ability to measure and judge the merit of one organisation against another then becomes enmeshed in many deliverables. Rules are established to measure outcomes; furthermore, rules are then established to measure the merit of the initial rules that have been implemented. This principle and cycle of evaluation has been integral to programs that offer continuous improvement. Over time, these programs have adopted the names of quality assurance, quality frameworks and excellence to name but a few. What they all have in common is that they are implemented to be observed at a corporate or institutional level to demonstrate both internally and externally an ability to meet certain rules of business engagement as an entity to be in control of itself as an entity. The gatekeepers of these quality programs then vie with each other to demonstrate that one is more effective than the other in increasing quality outcomes and therefore has greater validity for measuring organisations within the same sector. In doing so, the ranking of service offerings, products, companies or institutions against their competitors is enabled.

Consequently, granted the very nature of the competition it provides no surprise that quality measuring systems have their own struggles for superiority and dominance in their own market. Some are industry-specific, while others address wider business sectors such as information technology, finance, education and manufacturing. These systems are numerous, however as discussed in earlier chapters, they include the various iterations of ISO, the BEF, Six Sigma, AQTF, AUQA and the ERA.

The aged care sector is an industry that, like education, relies heavily on government funding with regulators and metrics-based assessment against outcomes. This sector has as its service providers: charities, benevolent societies and not-for-profit organisations, as well as private and public commercial organisations. They provide two types of services. The first are services within organisational institutions, such as
retirement villages, hostels, low-care and high-care facilities (typically referred to as residential facilities). The second are within the community through nursing and numerous government and community funded programs designed to assist the frail and elderly to remain within their own homes for as long as they desire and are able to.

**Making Quality Count in Aged Care**

**Aged Care in Australia**

Due to demographics, which indicate that in Australia we are experiencing an increasingly aging population, aged care is a challenging issue both at a federal government level and also for all other stakeholders. This increasing demand for services is evident when reviewing aged care management, whether from the perspective of the legislator or of the users of the services, those persons reliant on care to live successfully on a day-to-day basis.

Aged Care Australia is an initiative of the Australian Government Department of Health and aging and reminds us that in 2005, 9 per cent approximately 1.9 million Australians were over 70 years of age (Department of Health and Aging, 2009). The department estimates that over the next 20 years, this number will increase at a rate of 3.3 times faster than the rest of the population, equalling 18 per cent of the population at approximately 4.7 million people by the year 2025 (Campbell Research and Consulting, 2007). The Australian Institution of Health and Welfare Report that of all persons aged over 60 years of age, 90 per cent remain housed in private dwellings. Of persons aged over 80 years old, 75 per cent of women and 84 per cent of men remain in the general community, with less than 7 per cent being cared for in Australian Government subsidised aged care facilities (Campbell Research and Consulting, 2007).

Those elderly Australians who are able to utilise community services may delay the need to access residential aged care facilities and in many cases, not requiring them at all. Home and community care programs are usually as a result of the combination of state and federal initiatives. However, there are some charitable programs and
community programs that specifically target special groups, such as returned services personnel. These are typically funded by church groups and in the case of the returned services personnel, the Returned and Services League of Australia. Government-funded programs include a number of different services through home and community care and community and aged care packages, extended aged care at home dementia and extended aged care at home. The programs to support the elderly in their homes are many and quite diverse in nature, ranging from the simple but meaningful services such as social support and assistance with shopping through to special needs care such as dementia support and palliation.

The funded programs are designed to increase with service levels and time allocation as the recipients’ needs increase. This may include moving through the packages in a model of continuum of care or as a care recipient moving from one package to another. It is important to understand that, as with subsidised beds in residential care, the number of packages and their location and availability in the community is restricted. Service providers seek packages on an annual basis for specific needs and clearly defined geographical areas. Service providers then have to increase or contain their operations depending on their success. Once a number of packages have been allocated to a service provider, it is unusual for that provider to lose that level of funding or have it reduced through subsequent funding rounds from year to year. This is assuming that the service provider is able to demonstrate that they comply with the relevant package regulations and are utilising all of the packages allocated and that they remain compliant to strictly audited outcomes.

Even with access to these community services, women over the age of 65 have a 46 per cent likelihood of being admitted into residential care, while men at the same age have a 28 per cent expectancy (Campbell Research and Consulting, 2007). People in residential facilities are typically frail and require significant assistance with their day-to-day living requirements. With the increased age among the population, this has placed great strain on the ability to meet the needs of the elderly within residential facilities and has resulted in more community-based packages for support being offered to alleviate this situation.
For those who are able to achieve a place in these residential facilities and there is a high occupancy rate, there are a number of variables offered. These include: the state in which they reside and distance from home, the distance of travel by loved ones and the requirements for levels of care. Included in these are: high and low care, extra services, end-of-life (palliation) care, short-term care, transition care, care that takes into account cultural and specific identifiable needs, including particular health conditions and the need for a combination of services (Department of Health and Aging, 2009).

Having made the decision to utilise community or residential care for government-funded packages such as community aged care packages, extended aged care at home dementia and extended aged care at home or residential placement, then assessment by the aged care assessment team is required. The Aged Care Act 1997 allocates approval powers for potential recipients of access to residential aged care facilities to the Secretary to the Department of Health and Aging. This responsibility is devolved to suitable qualified aged care assessment team delegates who in turn conduct assessments on potential package and residential care placement recipients for suitability. Therefore, should a person wish to inhabit a facility; there are a number of formalities that are necessary. Even with an aged care assessment team assessment at the appropriate level for aged care residency, the potential recipient or their carers must research to find a facility with an available bed at the level required. This can be difficult, especially in remote areas where waiting lists can be substantial. Added to this may also be the need to provide an accommodation bond for low care and extra services accommodation, depending on financial circumstances.

The government intent of allowing the service providers to collect accommodation bonds was initially to ensure that the providers could maintain capital works. In June 2003, it was estimated that $2.7 billion was held by service providers in bonds; however, there is no clear evidence of how these bonds have been utilised by the service providers holding them. Added to the earning potential of these bonds and as offsets against organisational debt, approximately $124 million in revenue from accommodation charges had also been received in the same period across the industry (Department of Health and Aging, 2009). A Review of Pricing Arrangements in Residential Aged Care closely examines income generation for the residential aged care
sector in particular, the prudential requirements of the industry for the holding of accommodation bonds. This may lead to further requirements of compliance depending on the final decisions of the Australian Prudential Regulation Authority (Department of Health and Aging, 2009).

**Regulation**

With or without further regulatory requirements from Australian Prudential Regulation Authority, the regulation of in-home and residential programs in the aged care sector is already complex and the management of these requirements is exacting for both the service providers and the regulators. The type of regulation implemented will depend on the funding body. For community-based programs, these are extensive and include several government programs aimed at different levels of community need and different levels of individual requirements. Community need might include considerations such as remote area locations where there are no other support services; a community with demographics that reflect a high aged population; a community that has difficulty attracting the residential care providers or where the residential care providers are overwhelmed and require community-based assistance. Often the community-based resources are leveraged by the residential facilities to assist them with their aging population in their independent living units.

Community-based programs are focused on client need rather than on want and cover all levels of care from palliative nursing to social support. To be included in these programs different community-based or professional referrals, depending on the level of service needed, are required. These referrals can be from one’s self, family, health professional, medical practitioner, government agency or referral from a combination of the above for inclusion in a community program or addition to their waiting list. Government agencies then monitor client numbers and waiting lists, as well as under-utilised programs, to assist with future funding decisions.

Given the focus on needs, some of the community-based programs throughout Australia maintain the ability to focus on client want as well as need, and often exist with a mix of government and community support as well as client contributions. These include independent operations such as meals on wheels and many of the
transport and shopping assistance programs operated through community groups, including local churches, the Country Women’s Association and the Returned and Services League of Australia.

While community care has as a requirement the successful meeting and maintaining of standards as established by regulators and government policies, residential care shares some parallels with education, thus I focus on this sector in this chapter. The ERA seeks to achieve the distribution of funds to the most worthy research institutes within specifically defined areas and thereby increase public good. This has already been discussed in Chapters 3 and 4. Aged Care Australia, the initiative of the Australian Government’s Department of Health and Aging, seeks to promote, develop and fund health and aged care services for the Australian public (Australian Government, 2009c).

In 2007, the Commonwealth of Australia released a report prepared by Campbell Research and Consulting drawing on the expertise of Dr Wellington of DLA Phillips Fox Lawyers for regulatory analysis, Dr Balding, former manager of the Victorian Quality Council for the development of a quality indicator framework and Monash University (Campbell Research and Consulting, 2007). The resulting report, the *Evaluation of the impact of accreditation on the delivery of quality of care and quality of life to residents in Australian Government subsidised residential aged care homes*, is an important document for the industry that it seeks to assist. This report examines many issues related to accreditation and the role of quality in supporting accreditation, quality improvement and the inextricable link between the availability of public subsidy and achieved outcomes of accreditation (Campbell Research and Consulting, 2007).

To understand the links between accreditation, compliance, quality indicators and government funding in Australia it is important to first understand the rules that surround accreditation. The Aged Care Standards and Accreditation Agency Ltd manage accreditation in aged care in Australia (Aged Care Standards and Accreditation Agency Ltd, 2009). They themselves are provided with quality assurance through the ISO standard, ISO 9001, and are a member of the International Society for Quality in Health Care Inc. an International non-profit independent organisation that has a
current membership across more than 70 countries (International Society for Quality in Health Care, 2009).

All residential aged care homes and facilities in Australia that receive funding from the Australia Government are accredited (Aged Care Standards and Accreditation Agency Ltd, 2009). The process for accreditation is outlined in the Accreditation Grant Principles 1999, while the *Aged Care Act 1997* and the Accountability Principles 1998 determine the rights and responsibilities of approved providers. Fundamentally, the process for accreditation establishes that the provider must meet a number of principles and practices deemed essential for the provision of appropriate care and that the meeting of these principles is maintained through self-assessment and agency assessment in an ongoing basis. Entwined into this process is the need to demonstrate ongoing compliance and continuous improvement. This demonstration is evidenced through site support visits and review audits by agency staff (Aged Care Standards and Accreditation Agency Ltd, 2009).

There are four Accreditation Standards. Standard one addresses management systems, staffing and organisational development. Divided into nine sections these include: continuous improvement, regulatory compliance, education and staff development, comments and complaints, planning and leadership, human resource management, inventory and equipment, information systems and external services. For this standard to be achieved, the provider must demonstrate that the management systems are responsive to the needs of the residents and all other stakeholders at all times. They must also take into account the changing environment and be encapsulated in the philosophy of the facility as demonstrated by the level of care offered (Aged Care Standards and Accreditation Agency Ltd, 2009).

Standard two applies to issues that include health and personal care and seek as expected outcomes: continuous improvement, regulatory compliance, education and staff development, clinical care, specialised nursing care needs, other health related services, medication management, pain management, palliative care, nutrition and hydration, skin care, continence management, behavioural management, mobility, dexterity and rehabilitation, oral and dental care, sensory loss and sleep management. The 17 sub-standards seek to ensure that providers promote residents’ physical and
mental health at optimum levels and that this occurs as a partnership with the resident, other healthcare providers and relevant stakeholders such as family or their representatives (Aged Care Standards and Accreditation Agency Ltd, 2009).

Standard three addresses residents’ lifestyles. The standard’s 10 items have expected outcomes that include: continuous improvement, regulatory compliance, education and staff development, emotional support, independence, privacy and dignity, leisure interests and activities, cultural and spiritual life, choice and decision-making, resident security of tenure and responsibilities. This standard seeks to ensure that residents retain their individuality both in the facility and in the community and that their personal rights such as civic, legal, personal and consumer rights are recognised and retained (Aged Care Standards and Accreditation Agency Ltd, 2009).

The fourth standard is the physical environment and safe systems standard. It consists of eight parts and together with the last three standards and their items create what those in the industry refer to as the 44 outcomes. The expectations of this standard alike the first three standards include: continuous improvement, regulatory compliance, education and staff development; living environment, occupational health and safety, fire security and other emergencies, infection control and catering cleaning and laundry services. This standard seeks to ensure that residents, staff and visitors to the site enjoy comfortable surroundings and that one’s quality of life is maintained (Aged Care Standards and Accreditation Agency Ltd, 2009).

While a principal activity of the agency is full audit and lesser spot audits called support visits, the agency does provide training and education forums and seminars. Information includes access to pertinent websites, events and toolboxes. The agency prides itself on transparency and providing support to service providers. Assessment is deemed to be rigorous and adherence to the standards is expected as a minimum level for accreditation. Assessors are recruited from the ranks of service providers, healthcare professionals, quality assurance staff and allied health. Assessors undergo training and must maintain a level of ongoing professional development (Aged Care Standards and Accreditation Agency Ltd, 2009). The relationship between the assessor and the residential facility can often depend on the personality of the players involved. However, those service providers who remain compliant and can demonstrate this on a
day-to-day basis typically find it easier to operate given the ongoing surveillance and regulation.

**Compliance**

Maintaining compliance can be very difficult in an industry that is resource starved and where the changing roles of healthcare professionals ensures that they spend less time in client care as a result of the need to provide documentary evidence of every function that they perform during operations. The report into residential aged care, the *Evaluation of the impact of accreditation on the delivery of quality of care and quality of life to residents in Australian Government subsidised residential aged care homes* investigates the industry’s accreditation standards, their ability to achieve government objectives in a regulatory framework and given these standards and the resulting framework, how to assure compliance and consequently, continuous quality improvement (Campbell Research and Consulting, 2007). These considerations are fundamental to the principles of TQM, standards and excellence programs and are essential to understanding this work Design Quality: Evaluating Quality as a Tool and the Potential Impact upon Design Outcomes of Quality Frameworks, because a core understanding of this work is that all aspects of a regulatory framework or a quality system are meaningless without compliance.

The intention of the Australian regulatory framework with regard to aged care is to examine the objectives in allocated funding to providers. This includes: the quality and appropriateness of the outcomes for the recipients of care and the accountability of the services providers for those outcomes and the funding received. The aims of the Act are to achieve not only quality of care but to ensure that this quality translates into quality of life for residential aged care recipients and presents both direct and indirect strategies to achieve this. Such strategies maintain the focus from approval of premises to accountability for approved service providers, only providing funding to service providers that are approved as suitable. Strategies also ensure that the rights of recipients and the responsibilities of service providers are specified both in the Act and in the *Quality of Care Principles 1997*. Maintenance of these strategies is underpinned by the provision of a system of sanctions for non-compliance, incentives
for ensuring certified premises and care subsidies where accreditation is met (Campbell Research and Consulting, 2007).

The regulatory framework established by the Act and the resulting accreditation requirement seeks to ensure a regulatory link between funding, quality of care and quality of life in residential facilities. As a result of prior application, approved aged care facilities will hold allocated funded places (beds) that will attract payment providing that the service provider meets their responsibilities for accreditation. This means that they are compliant against the four standards and 44 expected outcomes. Service providers can apply for further beds as they become available, provided that they are compliant at the time of application.

Accreditation and ongoing compliance is essential to maintain operations not only for the services provider but also for the residents and other stakeholders of their service provision. Accreditation is managed via the agency, a limited company with the Minister for Aging as the only member. The minister then appoints a board of directors whose ability to earn revenue for the agency is increased through the fees received for education and ongoing applications for accreditation paid by the service providers. This process is circular. The service providers rely on the agency for accreditation and the agency relies on the service providers to maintain accreditation.

The seriousness of this relationship was underpinned in 2004 by the then Minister for Aging Julie Bishop, when a further $36.3 million over four years was allocated in the federal budget of the Australian Government to enhance the agency’s monitoring and educations roles (Campbell Research and Consulting, 2007). Preparedness for assessment for accreditation and demonstration of ongoing compliance is the responsibility of management and staff within a facility. They must be able to demonstrate that there is a clear established system that is utilised and operates effectively. This must be a robust quality system with defined continuous quality improvement practices that support each aspect of the organisation and demonstrate compliance to the four standards and 44 expected outcomes. This is a multi-linear process. Facilities must not only demonstrate that they have met all of these outcomes but where a facility is a member of a larger organisational group, they must illustrate that all policies, practices and outcomes support and meet these standards at a
corporate (head office) level. This becomes particularly difficult with the larger aged care providers as they may face complex variations in compliance requirements arising from several Acts in support of different funding providers’ needs. In these cases, mapping exercises are often undertaken across a number of regulations. Then the most stringent of the Acts is complied with across all operations. Any individual idiosyncrasies of Acts are identified in this way and accommodated for in the resulting policies and procedures.

In aged care, compliance is a product of the accreditation process. The stages for accreditation include: self-assessment, a self-assessment supported application, a two member agency team assessment, a desk audit of the application, a follow-up site visit that includes stakeholder interviews, a review and then a decision about the length (where appropriate) of accreditation and the ongoing support required. These support visits seek to ensure that the service provider has maintained compliance to the Act and that the improvements are continuous. Accreditation is typically for a three-year period; however, should a facility prove to be having difficulties with remaining compliant, this time frame will be reduced. From May 2006, the agency has undertaken to ensure that each facility receives one unannounced visit annually for the purpose of ensuring compliance (Campbell Research and Consulting, 2007).

Non-compliance provides with it sanctions, further audits and in some cases, loss of accreditation with a timetable implemented to assist in enabling conformity. Should a facility remain non-compliant, the Secretary for the Act is notified and holds the ability to enforce a number of sanctions, including the suspension of the provider’s approval.

**Stimulating Quality Improvement**

The need to assure compliance and with it continuous quality improvement is therefore imperative not only to the agency but also the service providers, staff, service recipients and all other stakeholders in the process. In this case, standards are clearly defined, as are the expected outcomes. The ability to conform to this defined set of the standards and their 44 expected outcomes is evidenced by service providers meeting known minimum outcomes. These standards are measured in situ, at operational site level with appropriate accountabilities and responsibilities being clearly demonstrated
both by the agency and the service provider as a response to detailed audits of the services provided. The standards therefore imply a static set of rules that can be measured and measured against. This level of standardisation will enable the principles of benchmarking and best practice to be established and maintained across all service providers in the industry. It is important to recognise that while these rules have the apparent property of inelasticity, as a set of defined standards they must also have the property of fluidity.

The principles that are inherent in continuous quality improvement are also ones of fluidity. Continuous quality improvement promotes the observation of each process in its many parts. This observation allows through a change management process, the ability to assess and to present possible improvements. The process is then similar in most processes improvement models. The models test the proposed improved processes, alter these where necessary, test again, and then finally implement the improved process when satisfactory after an education and implementation program is undertaken. As a result, there is ongoing monitoring, review of the process and then once again, the system of change commences when an opportunity for improvement presents itself.

As standards are usually static, to have continuous quality improvement and the adoption of best practice as an overarching principle across a standard creates tension. While all processes that support standards should be able to be reviewed and changed a potential situation of uncertainty is created if substantial rework is required when the opportunity for improvement may be minimal. To assume the proposition that every staff member is able to identify and propose improvements issues more problems. While each person involved in a process may be able to identify potential improvements, there are usually very few people in an organisation that have insight into how a change will affect other established processes this is the flow-on effect. The management of a continuous quality improvement program within an organisation is costly and time consuming. When cost benefit analysis is applied, it will often prove to be economically unviable in smaller facilities. This circumstance is exacerbated when the size of a facility, its network or lack thereof, and operational processes limit its ability to leverage knowledge and resources.
Larger organisations in Australia have many facilities over a wide geographical spread. RSL Care is an example of one of the larger aged care providers in Australia with their geographical spread across Queensland and New South Wales. RSL Care has 27 retirement communities with 4,500 aged care recipients. RSL Care is quality-assured and received bronze level accreditation of the SAI Global BEF program (RSL Care, 2009). To achieve this rank, RSL Care had to demonstrate that it had this level of quality assurance across all of their teams, facilities and homecare services in addition to the agency accreditation for all of their facilities. Furthermore RSL Care had to meet the regulator’s requirements for several other quality programs pertinent to other funding agencies in their Homecare service delivery; the most notable from a quality perspective being the Home and Community Care suite of services (Home and Community Care, 2009).

To meet these strict compliance requirements, RSL Care harbour a large corporate team of compliance officers, and field staff support this team with compliance as a core deliverable in their key performance indicators. The size of RSL Care ensures that the costs of these practices are allocated across a significant client base, thereby allowing for significant investment in continuous quality improvement and also the ability to leverage best practice and continuous quality improvement in a way that allows for a level of trial and error. The company employs control charts to monitor all care processes and the outcomes of new initiatives. They have a five-year strategic plan that is publicly accessible and lists their ability to respond to the changing needs of their clients and all other stakeholders through a number of well-documented strategies: one of these being innovation, quality and improvement.

RSL Care express as their goals, the need to live the aspirational excellence approach to create value through every organisational initiative and to measure improvement (RSL Care, 2009). To meet this objective, they have a number of strategies that include: embracing the BEF standards and reducing variability in their processes, improving stakeholder outcomes through better prioritisation of opportunities, improving relationships with suppliers and listening to the voice of the organisational system (RSL Care, 2009). These strategies are then measured through performance indicators that include: the adoption of processes demonstrated to ensure greater stability and the reduction of variability; the number of new innovations that are
implemented; the effectiveness of relationships with their suppliers, including cost-effectiveness and the annual increase of the self-assessment score, which is performed by each operational unit in the organisation (RSL Care, 2009). These are strategies and deliverables against which measurement can be determined that mirror the BEF principles discussed in Chapter 3 and at the same time, support much of the language of the accreditation agency.

RSL Care is a large organisation with a research facility that has formed partnerships with Griffith University, Queensland University of Technology, University of South Australia, University of Wollongong, University of Sydney, the University of Queensland and the East Australia Dementia Research Consortium. Their research is currently focused on a number of industry relevant areas: among these are service delivery models and evidence-based practice (RSL Care, 2009). They are a sophisticated organisation with policies and processes in place to meet both the static and fluid requirements of an industry that is increasingly demanding greater evidence of performance.

But how does this impact upon the small operator the lesser industry players? Unable to rely on resources acquired over time, they are often able to meet static requirements but are challenged through lack of infrastructure to meet all of the deliverables of a continuous quality improvement process. The agency provides education and other support programs; however, this relies on an investment of time. The independent single-site operator typically does not have the staff to allow for participation in conferences and user group forums, leading to amalgamations. Increasingly smaller operators are subject to corporate takeovers, mergers or amalgamation by the larger ones. Some small operators actively seek an organisation that they feel mirrors their values and workplace models so that they are able to leverage skills and knowledge and be protected from the issues that arise from lack of professional resources and issues of training and knowledge acquisition.

Amalgamation often means that the smaller operators are then better able to meet the requirements of the agency. With regard to this point, it is important to understand that while agency requirements may be better met this does not guarantee a greater level of actual care for the recipients of aged care services in the smaller facilities, as
the meeting of standards may be in many instances an ability to tap into corporate office knowledge and compliance banks for structured documentation for policies and processes not previously available. One objective of the agency is to ensure that public monies are spent appropriately. A significant consequence of this has been what the government has described as the cleaning up of the industry and the increase in the meeting of standards by facilities (Australian Government, 2009c).

However, this has been at a cost. In Queensland there has been a trend of experienced nursing staff leaving the aged care sector and returning to hospitals or to community placements. Exit interviews of nursing staff often cite the increasing demands of paperwork and the reduced level of client contact as a motivation for departing the industry. Importantly, public funding to facilities for client care has not increased in relation to the increased levels of compliance sought by the agency. Strategies that service providers adopt to counteract these increased costs often include: employing less-skilled care staff to perform duties once the responsibilities of higher and more expensive qualified staff. Seemingly, this strategy can raise its own risks. In an attempt to mitigate this risk further, control charts, a process explained in Chapter 2, and risk management systems are incorporated into the operational model by the organisation and the process then becomes circular with the agency accreditation and assessment process needing to audit the processes that they have unintentionally created.

Legislating for Outcomes

Via the establishment and refinement of aged care policies, both the Liberal and Labour Governments did not envisage these outcomes. The principles and practices encased in and resulting from the implementation of the *Aged Care Act 1997* sought to ensure that public subsidy of residential aged care facilities was and remains, in the main, reliant on the funded facilities meeting the objectives of the Act; namely, quality of care and quality of life for the aged care recipient and the service provider’s accountability for this outcome. Funding by the Australian Government is therefore not only reliant on the quality of the aged care provider as measured through accreditation and ongoing audits, but also on the agency itself and its ability to ensure that their
accreditation and assessment processes also meet with quality standards (Campbell Research and Consulting, 2007).

It is important to understand that the end user is the care recipient. Every process, policy and nuance brought to bear upon aged care as an industry is done so to ensure that the community is providing for its frail and elderly and that successive governments are able to maintain that support. In the *Review of Pricing Arrangements in Residential Aged Care* this issue is closely examined. The reviewer, Hogan, together with assistance from a wide team and taskforce, including members of the Expert Technical Advisory Group and the Industry and Consumer Reference Group investigated how public and private funding for residential aged care would be managed, as well as the long-term financing (W. P. Hogan, 2004). The final review took two directions. Firstly, it looked at the industry, its problems and prospects; and secondly, the results of an empirical analysis of the industry with the aim of understanding the contemporary performance of the sectors service providers.

The review clearly reflects that the rise in cost of aged care is a major concern together with the intergenerational inequities caused by these costs to one sector of the community. The review findings seek a higher financial responsibility by the aged care sector, while at the same time ensuring that the needs of potential recipients among this group are not disadvantaged. The review recognises that public policy must appropriately address the provision of suitable services for the older Australian; however, it weighs this seriously against the ability for these policies and resulting actions to be sustainable. Ultimately, it looks to the user providing larger co-payments for the receipt of their services.

Inevitably, these statements illustrate the need to examine efficiencies. To do so, data from the aged care providers had to be systematically gathered to provide financial and economic responses to questions raised about the industry. This data explored the day-to-day running expenses, as well as the opportunities for capital growth. Paramount to the review was an understanding of the relationship between the service providers and their state and federal legislative and administrative frameworks and how these influenced performance. The review found that contrary to the expectations of the service providers, the task force highlighted opportunities for significant
productivity gains, finding the gap between most performances in the sector and best practice to be significant. The reviewer believed that in time, costs could be lowered to residents, services expanded upon and real wages for staff improved if best practice was pursued across the aged residential care sector and regulated (W. P. Hogan, 2004).

While all being excellent goals for the industry to pursue, how will this impact upon the quality of the actual care of the end user – the aged care recipient in residential care? The Evaluation of the impact of accreditation on the delivery of quality of care and quality of life to residents in Australian Government subsidised residential Aged Care homes report reminds us that regulation under the Act is only one part of a comprehensive framework. Residents rights are provided for in the Act and the User Rights Principles 1997 where resident charters, advocacy services, visitor schemes and the complaints resolution scheme are legislatively provided for (Campbell Research and Consulting, 2007).

These user rights principles seek to ensure that residents in aged care facilities are able to exercise their individual rights without an effect on other residents and without a loss of inherent rights. This includes personal, civil, legal and consumer rights, and allows for the provision of information to all residents about their rights. One of these rights is the right of independent advocacy; another is the right to have a community visitor. A volunteer scheme is funded by the Australian Government and provides funding for the training of community-based volunteers. Its aim is to improve quality of life through connectedness to the local community, especially where there are no family or friends to provide social support (Campbell Research and Consulting, 2007).

The Complaints Resolution Scheme is also operated by the department and has as a principle the idea of continuous quality improvement as a result of both internal and external systems of complaint resolution. Internally, the complaints mechanism is available through access to an aged care recipient’s facility, complaints resolution processes and externally through the scheme if the internal process does not give the desired results. These processes are clearly documented and are also part of the accreditation process being Standard 1.4 Comments and Complaints. The Complaints Resolution Scheme is diverse and the government has attempted to ensure total
access to this mechanism by all stakeholders in the process while ensuring that complaints, if required, are able to remain confidential or anonymous. As recently as 2006–07, this scheme was made more robust when the investigation processes were increased to include reporting of sexual and physical abuse of recipients. This process was also set up to make sure that it was compulsory for the person making the report to be protected. The agency has instigated greater levels and frequency of unannounced visits to facilities and mandatory police checks are now requisite for all paid and voluntary workers where Australian subsidised aged care services are provided (Campbell Research and Consulting, 2007).

**Negotiating Mutually Beneficial Outcomes**

There are a number of stakeholders in the residential aged care model of service delivery. These include but are by no means limited to: the care recipient, their carers, their family, their friends, advocates, staff at the facilities, their support mechanisms, other organisational staff, board members, shareholders where applicable, a myriad of health professionals, other ancillary health professionals, volunteers, suppliers, neighbours and the community. Added to this stakeholder group and impacting upon their outcomes and or deliverables are the legislators. Residential villages can be impacted upon by all of the services, including: water, gas and electricity, local council personnel and council bylaws, state statutes, relevant legislation and codes and federal legislation and, of course, all of the many people who ensure that these different groups are satisfied through monitoring, audit and particularly the accreditation process.

It is important to understand that accreditation is the legislative vehicle for ensuring industry compliance and that the program also acts as a conduit for the championing of continuous quality improvement and best practice initiatives. It is therefore important, to be able to identify the level understanding of the process, any benefits experienced by stakeholders and how it has improved the quality of care and quality of life of the recipients of aged care services in residential facilities.

The *Evaluation of the Impact of Accreditation on the Delivery of Quality of Care and Quality of Life to Residents in Australian Government Subsidised Residential Aged Care*
Homes report draws upon evidence from regulatory analysis, literature, stakeholder consultations, agency data and aged care surveys. From this evidence, it was concluded that accreditation has had a positive impact on the quality of the overall sector and that given the measures introduced in the 1997 reform package, the accreditation process has had the most important influence on quality outcomes. Factors that contributed to improvements were tabulated (see Table 16) from data collected through research by Campbell Research and Consulting (2007) from persons who have worked in the sector for more than 10 years with comparison drawn between the quality manager and care staff.

Table 16. Factors that contributed to improvements in aged care

<table>
<thead>
<tr>
<th>Contributing factor</th>
<th>Quality manager</th>
<th>Care staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accreditation</td>
<td>68%</td>
<td>48%</td>
</tr>
<tr>
<td>Staff training and education</td>
<td>43%</td>
<td>38%</td>
</tr>
<tr>
<td>Regulation and accountability</td>
<td>35%</td>
<td>23%</td>
</tr>
</tbody>
</table>

(Campbell Research and Consulting, 2007)

All areas were ranked and the areas of comparison included: accreditation, staff training and education, with regulation and accountability being positioned third of three. These three factors were then given as a percentage of 100. Other factors were followed by factors of resident focus, management structure, government funding, certification and competition having the lowest deemed contributing factor (Campbell Research and Consulting, 2007).

Given that the aged care sector is a care industry it is not surprising to reflect that competition ranks the lowest by the quality manager and the care staff. The aged care industry is about finding beds for clients so that they may be cared for. Residential facilities often meet on a regular basis to remain informed about wait lists and potential or available beds across close geographical areas. It is not uncommon for the manager of one facility to arrange for staff to place a client who is in urgent need of accommodation with a competitor should they not be able to offer available accommodation. The practice of “juggling beds” is important, as facilities are required to ensure that beds that are funded remain occupied to be able to meet financial
objectives. This is the case regardless of whether they are a single facility provider or a part of a larger group. The logistics required to manage this successfully are complex given the range of services available and the funding types. If a facility has a high-care bed available, they cannot put a resident at another level of care, say low-care, as assessed by aged care assessment team, into that bed and claim funding. Most facilities operate on wait lists with a range of levels of assessment so that they can manage vacancies more readily.

Managing a facility and ensuring it remains compliant requires a very specific set of management and professional care skills. It is not surprising that the researchers found that service providers that did not achieve accreditation in the first round typically did not apply for accreditation in the second and subsequent rounds. It was inferred from the data that these facilities had been either closed or merged or acquired by alternative accredited providers. There was evidence that some residential facilities that were providing poor service levels were closed altogether. Therefore, gains from the process of accreditation were well documented and supported the team’s findings. However, the report found, that through consultation the issues of tensions between the standards and potential for process improvement were apparent. Service providers had difficulty identifying and improving upon aspects of the accreditation process and the researchers found it difficult to identify improvements because of the lack of a foundation from which to measure possible gains (Campbell Research and Consulting, 2007).

Stakeholders who had been in the industry prior to 1997 and the introduction of the accreditation process particularly noted a positive improvement. They attributed this to the accreditation process and the establishment of minimum standards and ongoing assessment of aged care facilities. They questioned the benefit of continuous quality improvement provisions and felt that residential facilities that had displayed process improvement were more than likely to have done so outside of normal daily requirements rather than as a result of accreditation provisions. Ninety-three per cent of quality managers and 86 per cent of care staff supported continuous quality improvement initiatives while 93 per cent of quality managers and 87 per cent of care staff felt that accreditation had ensured an acceptable minimum standard of care. The stakeholders listed the following positive effects of accreditation: Round 1 experienced
the reduction of the number of poor service providers; the introduction of well-regarded standards; developments in improved processes and procedures and implementation, including that of education, safer work practices, higher levels of resident participation in activities processes and procedures. Round 1 also saw increases in quality of care and consistency of practice; the highlighting of lifestyle options and their importance for care recipients as well as increased awareness and access to resident rights provisions, better auditing and monitoring practices by the assessment teams and lastly, greater levels of accountability by the service providers (Campbell Research and Consulting, 2007).

Therefore, the report concluded that stakeholders in the aged care sector attributed accreditation with ensuring that minimum standards were met in aged care facilities in Australia. This was supported with agency data that indicated that 90 per cent of all aged care facilities were assessed as achieving total compliance when compared to 67 per cent in the initial Round 1 and that new facilities entering the industry maintained an 80 per cent full compliance against the 44 expected outcomes compared with 67 per cent in Round 1 (Campbell Research and Consulting, 2007).

Summary

This chapter has focused on the aged care industry. This has relevance to this work as it demonstrates an industry’s strict requirement for compliance with standards to attract and once received, maintain government funding. Perhaps the most significant discussion point is initial funding and subsequent sanctions that are placed on non-compliant service providers. This is because I am concerned about the initial funding of research under the ERA and then ongoing support. I believe that universities could expect or lobby to gain the same ongoing considerations that aged care in Australia receives. That is, once funding has been allocated only in the event of the very direst of circumstances would funding be reduced?

It is plausible that the receipt of research grants to a university, under the ERA, if consistent with the aged care model, will ensure that once funding is awarded it will, at a minimum, be maintained at that funded level. Therefore, the first funding round will
be the most significant. This is unless there is a large increase in funds at some point in the future, which based upon past evidence, seems unlikely.

Another important consideration from the aged care model is the increasing need for compliance. While there is an understandable need to ensure that the most frail and elderly of our community are treated with respect, care and dignity at all times, the four standards permeate all aspects of an organisation that provides care. These aspects include: risk management, education and training, IT services, philosophies, management skills and police checks for all staff in the organisation to name but a few. The accreditation and ongoing compliance processes are pervasive. Through continuous quality improvement and best practice initiatives, the agency is able to orchestrate how a service provider operates, how they use their funds (government or otherwise) and how they plan their future. Increasing the metrics that service providers have to deliver to meet existing standards and increasing the outcomes of the standards where best practice initiatives have brought about efficiency gains that need to be adopted across the sector achieve this.

This model can be problematic as it relies on the service provider maintaining service levels during periods between accreditation and reaccreditation, especially when the process of transformation from non-compliance to being compliant can address issues identified during an unannounced visit. More importantly it relies on the legislation and training of the agency staff being at a level where their audit and support functions consistently ensure the adoption of best practice by the sector. These are all very important issues for design research to consider.

The allocation of funds on an ongoing basis could be problematic for smaller universities with reduced research outputs. If they implement the aged care model, they will either seek amalgamations or surrender research altogether. Once a university is successful in attracting funding, this will be increasingly monitored and the policies and practices of the funded institutes will progressively merge and submit to government agency requirements. This will be a required outcome in maintaining compliance and the funding that they will have learnt to rely on.
The resulting quality initiatives may be viewed within universities as an improvement, however, with quality, generic responses to problems are generated, a uniformity that arguably should be repulsed by universities who look to differentiation in the market both for scholarship and for institutional status. Standardisation by the regulator also supports the idea, that their standards are superior or right. This situation gives power to the regulators and leaves little opportunity for any superior processes in place with service providers to survive. The need to be consistent with the metrics of the regulators tends to only allow for improvement through process improvement models. Lastly, there is no real avenue for debate when there is difference of opinion about what meets a standard and what action must be performed to remain compliant. This does not serve public good as discussed in Chapter 3.
Chapter Eight: Discussion

*Research is systematic enquiry, whose goal is communicable knowledge* (Archer, 1995, p. 6).

Introduction

An initial concern of this work was how designers, design schools, design school researchers and academics would survive the rigors of compliance and continuous quality improvement as a discipline to be applied to their design discipline. Linked into this concern was the potential for regulation, in the form of consistent compliance, to thwart creativity. This was a concept that needed greater attention, as one response to the questionnaires (2) was that design had nothing to do with creativity.

I have since found that design is determined in any manner of ways by individuals; however, it is still my strong conviction that design is creative. Its creativity is founded in the very way that design seeks to generate a response to a problem or to enhance an existing communication or artefact. This may be in the form of a plan, a stratagem or a scheme to determine a result, yet at the foundation of its resolution is the principle that something has to be created, whether it be the initial thought of how to proceed in the first instance.

As an observer, I have come to admire design and by applying Cross’s (2004) arguments as discussed in Chapter 5 can accept that my stance is as a lay-designer. To address this work, Design Quality: Evaluating Quality as a Tool and the Potential Impact upon Design Outcomes of Quality Frameworks, I have deliberately focused on defining quality and examined the tools indicated by designers as utilised to measure design rather than focusing on the inherent qualities of design. My discussions about design are to support this work through a broad understanding of a number of the design theories and the disciplines from where they emerged, and will not influence
how designers and design school academics work within a quality framework. This work may justify some of the designers’ responses to a quality regime; however, as I have attempted to reflect the thoughts, beliefs, perspectives, skills and experiences of the discipline of design of which the responses are so diverse, to encapsulate these within one behavioural response to quality would be impossible. My objective has been to explain the background and persistence of quality and the rise of quality frameworks, in particular the objectives of TQM. To take this understanding and to examine the responses of design school academics to design issues and through this knowledge understand design’s ability, as a discipline, to meet and shape quality issues, responses, behaviours and outcomes, as they will impact upon design has been my objective.

Summary and Discussion

Thesis Summary

This thesis has constructed four parts over eight chapters. Part I: Regulation provides an understanding of quality. In this discussion, the history, the discipline, the tools and what outcomes the quality movement hopes to achieve are discussed in detail.

It was important to define quality as the need to do so was underpinned by the lack of experience with quality frameworks as reflected by the design school academics that responded to the questionnaires for this work. Furthermore, their answers indicated a mistrust of the quality frameworks that they are required to work with. My endeavour was to resolve the deficit of knowledge on quality frameworks by offering a history of the quality movement. I have accepted and established, in Chapters 2 and 5 that the formalised introduction of design was with the early craft guilds. I recognise the argument that quality in its varying forms and the development of quality operate in parallel with the development of humanity from the earliest periods of history. I briefly presented a few of the drivers of quality, including its political, economic and technical aspects in Chapter 2. This, by no means, provides an exhaustive list and the discussion was merely outlined due to my intention of providing an illustration of the fact that they had evolved and also to define what they were; rather than to provide the motivation for this evolution. To this end, I examined several quality frameworks; to do
this I went to the actual framework documentation and have given a précis of the structure of the frameworks as well as indications of their philosophies. In support this work, Design Quality: Evaluating Quality as a Tool and the Potential Impact upon Design Outcomes of Quality Frameworks, I have provided an account of the history of quality as a discipline and an overview of the most pertinent quality frameworks. For higher education I focused on the AQTF, AUQA, the ERA and the defunct RQF; additionally utilised within education but important for other reasons is the BEF and the ISO group of standards. The BEF is of significance due to it being an Excellence program and framework similar to the proposed ERA, while the ISO standards have international accreditation and associations with all aspects of academic research.

Having offered an historical account and outlined a number of influential quality frameworks, I then in Chapter 3 sought to demonstrate what quality as a set of disciplines expects as outcomes, including being a defining agent, a driver of process improvement, drivers of both customer and staff satisfaction, and as an agent of control and compliance. As a defining agent, quality through its attributes enables assumptions about them to be made by persons who understand what is meant by a quality organisation. As a result, customers, consumers and staff should be able to gain satisfaction from the quality initiatives inherent in the organisations with which they trade or are employed. For this to be achieved, quality practices are defined by control methods, ensuring one’s compliance to agreed standards and ensuring that these are consistently met and improved upon. Finally, I completed this section by discussing risk mitigation, revenue maximisation and the prestige enhancing deliverables of quality programs. I also in Chapter 4 examined measurement and the ability to measure design research within a quality framework.

Part II of this work refers to design. As already stated, in Section I the purpose of the work is to understand quality’s potential to impact upon design. This chapter on design is to provide a context to the overall work and to achieve an overview of design and some of the theories that contribute to constructing the discipline that defines design. The intention was not to study the discipline of design, rather to strive to understand the philosophies that are integral to different design fields and provide clarity to the responses that design school academics offered to the 10-part questionnaire. In this process, I presented some of their definitions of design; however, the theories have
been discussed implicitly, as to do them justice would require several works. Therefore, attempts have been made to identify the theories that were fundamental to the discipline. I felt I had to take a stand on the arguments with regard to whether design is or isn’t a discipline. For my part, as argued in Chapter 5, I believe that design is very much a discipline possibly fragmented due to its need and ability to imbed itself in many fields; however, a discipline nonetheless, and arguably in its infancy stage while harbouring solid foundations and a growing body of knowledge.

The rationale for understanding the relationship between quality and design, Chapter 6, explored the theories of the critical theorists and the neoliberal or economic rationalists. I decided that the arguments of the economic rationalists best explained the development of and reliance on regulation and compliance within Australian organisations, including Australian universities. The chapter also allowed different tools of analysis to be compared. After this comparison I decided that both quantitative and qualitative research was appropriate for this work. The use of both of these analytical tools allowed me to examine the responses from the design school academics through their responses to either of the two questionnaires and to better understand their views and concerns with regard to the measurement of design and the quality frameworks’ impact on design.

In conducting the surveys, I gathered self-assessment data pertaining to the respondents’ evaluation of their levels of expertise with regard to quality frameworks. This data was used to compare responses against and to ascertain if and when experience resulted in insights into the questions posed. An analysis of the multi-disciplinary design areas and levels of responsibility of the design school academics that responded to the survey represents a fair cross-section of design school academics across their various fields and also across different levels of quality framework knowledge and levels of design school responsibility (as shown in Chapter 6). Design in its many guises across all of the disciplines that have as a component design, will need to attend to the training and resolution of difficulties that these design school academics have identified with regard to the adoption of and positive benefits to be derived from quality frameworks.
As a result of the relatively new introduction of the ERA to the research funding for universities; in Section Four: Control, I examined the existing situation with regard to quality and government funding for aged care in Australia. As discussed in Chapter 7, this was a strategy adopted due to the funding arrangements of the aged care sector in Australia and the number of parallels between aged care and higher education research. Both education and care at their many levels are the providers of services to persons who seek them in a structured manner with an end result in mind. They are the purchaser of services that are typically long-term, and rarely of a single item. They are both for services in politically sensitive areas, not only for the consumers but also for the government with respect to demonstrating public good for monies paid from the public purse. The federal government underwrites the provision of these services financially; and as one strategy to ensure public good and other government needs, such as budget planning, the service providers, the recipients of funding are subject to audit and monitoring by regulators as designated by the funding agencies. Both aged care and higher education research have the ability to access funds from private, non-government consumers; however all recipients of services will be subject to scrutiny by regulators due to the structure of their sectors.

**Overall Need and Outcome**

Design research will be subject to a new set of compliance deliverables when the ERA is fully implemented in 2010. A concern that was a prevalent feature of attempting this work was the degree to which design school academics understood the principles of quality frameworks and how educated in the practices of them they were. This is important if design schools are to capitalise on applications for research funding and maintain the levels of funding once secured.

The response to the questionnaires clearly illustrated that design school academics across a wide design field spread are under-prepared for quality frameworks and the ongoing regulation and compliance that is required of them. The design school academics argue that design can be measured; however, they fail to understand the technical requirements and structure that form a quality framework. This is a very important finding as ultimately every design school academic that undertakes design research will require an intimate knowledge of quality and its relationship with design
to ensure optimal results from their work and for them to fulfil their role within the university. I argue that all students and academics should be trained in quality requirements given the level of regulation that is applicable to universities.

**Thesis Contribution**

This thesis has contributed to the body of knowledge that has as its focus the impact of quality frameworks upon design schools. The most significant finding of this work is the indication of the understanding of design school academics with regard to quality frameworks. Design school academics, while arguing that design can be measured, do not believe that quality frameworks measure design accurately; furthermore, that innovation is limited by quality frameworks and that quality frameworks do not ensure that levels of excellence are met. These findings are crucial for a discipline that is facing quality measurement (via the ERA) for assessment and allocation of funding for research and consequential because this work demonstrates that design schools are unprepared for this process on many levels. This, however, does not imply that persons within design departments at universities are not working towards ensuring that they are fully informed about the ERA; however, what it does mean is that academic design school staff, as shown by their own self-assessment, do not have a strong quality mindset.

Will the views as collected from the design school academics with regard to quality frameworks persist? To answer this question long-term research will be needed. However, the ability for design school academics to understand quality issues is particularly relevant with regard to the ERA. With the introduction of the ERA, universities have the opportunity to ensure their academics have skills and knowledge available to compose informed decisions with regard to quality frameworks and to effectively utilise the tools that they bring to design. This is not only relevant for designers competing for research funding but as discussed in Chapter 6 designers complete research in every phase of the design process; the refinement and sophistication of these skills becomes one of the responsibilities of the design school academic through their curriculum starting with undergraduates.
An argument for these studies to commence at an undergraduate level is sound. A portion of designers will progress with their studies to complete academic design Research that will be measured through the ERA review process. To learn about quality at postgraduate level will not be in vain; however, it will be an irrational approach to the problem, given the research aspects to all design outcomes. Having an understanding of the processes that construct quality frameworks and how to engage them will assist designers prior to achieving this stage of their academic life and will enable them to overcome some of the concerns expressed in the qualitative responses to the questionnaires. Prior knowledge of quality frameworks will also ensure that designers regard the needs of future customers. As identified, quality frameworks increasingly require evidence that suppliers are also quality assured. Designers therefore encounter needs that are twofold. Firstly, they will be increasingly required to demonstrate quality habits and even quality frameworks as being a part of the design process and secondly, they will need to learn the rules of quality frameworks and understand the implications of these rules to ensure the best possible outcomes for research funding derived from the assessment process.

To be effective design school academics should have an intermediate understanding of the processes and practices that make up a quality framework and they should be able to argue and support their arguments with evidence that quality frameworks ensure that levels of excellence are met. This is vitally important as the end user controls the design of many quality frameworks. Therefore, current design school academics should prioritise and make explicit the design of a quality framework that achieves not only what is required by the AUQA, the ARC and the ERA, but to do so while satisfying the needs of design.

Seventy-seven per cent of respondents agree that the outcomes of design are measurable; of significance is that this response was indicated from across 15 different design areas from architecture to user experience design. If the outcomes of design are measurable, then they can be improved through quality process improvement strategies. The precedents and previous exemplars that Cross (2004) identifies are being used in design, especially craft-based design has parallels with the defined standards and precepts of process improvement that TQM systems and quality
frameworks champion. This ability to improve the outcomes of design can impact both positively upon the discipline of design and also on the outcomes of design research.

**Future Developments**

The potential to develop this research further and gain greater insight into quality frameworks within design schools would be very welcome. The very nature of the AUQA, ARC and ERA alliance and prerogatives means that design schools will increasingly be asked to demonstrate quality initiatives.

Design schools can fulfil this requirement in two significant ways as either a component of the university’s quality program or as the designers and drivers of the university’s quality outcomes. The quality development stage of the aged care sector invites the argument that design schools, as a part of a university, will develop and maintain a preferred quality framework in time. This may or may not be in the forms of the models necessitated by the AUQA, the ARC and the ERA. Granted the aged care model, I would argue that often a fourth model will be adopted that will envelop all of the attributes of the three aforementioned models. Therefore, a future development will be the design and development of a preferred quality framework. The role that design school academics will perform in this process will be tested by time.

**Recommendations for Future Research**

While undertaking this work, it became apparent that there remain design, quality and regulation areas that require research in the future; however, I offer the following suggestions as those that appear to be the most integral to this work.

The most noteworthy from my perspective would be the analysis of the AUQA’s first round audits after the ERA is fully functioning. This would be essential to understand the affirmation of areas that design schools have themselves nominated as requiring attention and the recommendations by the AUQA where requirements have not been identified by the universities. To have identified both affirmations and
recommendations is only beneficial if positive outcomes are demonstrated to have generated from this process. A gap analysis could then be established for comparisons and strategies for dealing with future audits.

Given the experience of the aged care sector, research into the awarding of second- and third-round design research would also establish a foundation for research application strategies by university design schools.

Research into the reasons why international students choose Australian universities would be of value at a macroeconomic level and also to enable universities to position themselves more favourably for this market.

Research into an appropriate undergraduate curriculum for quality systems pertaining to design research could address design requirements across all the disciplines that have as a component of their work, design and design research.

Finally, research into the cost of compliance would not only highlight the percentage of government monies that are allocated to supporting a government requirement but would also answer the question of how much it does cost to achieve proof of public good.

**Future Quality Initiatives Developments**

With the need for further research into the impact of quality, audit and compliance on design, a concern is that all of the quality framework requirements currently impacting upon higher education are primarily about audit. Seemingly, this is a shallow response to meeting the community’s needs. As a believer in quality as a principle but as a sceptic of the value of much of the practice especially compliance, the greatest advance in quality would be made when a regulator elevates education and provides assistance to meeting the shared goals as uppermost on their agenda; furthermore, regulators would reap greater rewards should audit become a support mechanism rather than a tool to marginalise the uneducated.
Regulation and compliance in the aged care industry has resulted in the cessation and amalgamation of many small operators. While there is an argument suggesting that many of these conclusions are not unsatisfactory, this is not always the case, and this issue will certainly remain while compliance is too costly for small operators to absorb. Consequently, this is negative for the industry and for the public good that is being sought; therefore, the outcomes of regulations are wasteful and inappropriate.

Amalgamations of single operators whether small universities or aged care facilities, for purposes of compliance only, that is to be able to provide compliance as a group, do not always provide benefits to the industry sectors and to the stakeholders, which includes the public. To argue that amalgamations always benefit the public, including the recipients of services presupposes that the small operator has no practices that are superior to the larger organisation that merges with them. This, of course, is statistically improbable. A better outcome for the community and at a far lesser cost would be for the regulators to manage the process by servicing the group as a whole, enabling greater public good while preserving the aspects of the smaller providers that are good practices.

**Ideal Design School Research Outcome**

This work has illustrated that design research participants within universities are not prepared for the compliance aspects of the ERA. There are teams across campuses that have the ERA as a focus and are expert in its provisions and the application process. However, the knowledge of these teams is contained among a few and as shown by the respondents to the questionnaires design school academics do not have confidence with quality frameworks.

This work is about Design Quality: Evaluating Quality as a Tool and the Potential Impact upon Design Outcomes of Quality Frameworks. The impact is upon design outcomes; arguably, an impact that is holistic and that to be effective cannot be delegated to a select few. For universities to gain from quality frameworks and from this study they will orchestrate mechanisms that will ensure that all design school participants at all levels have an understanding of quality, what it means, its philosophies, its aims and possible outcomes.
As I have argued, quality is a component that will prevail over time. Quality as an influencing agent for design will remain prevalent. For those involved with design, they may choose to ignore it, attempt to manipulate their work around it or embrace it. Regardless of the reluctance or personal stance of those in the design field, the last of these options will be enforced upon design schools because of the requirements of a higher level of sophistication required by the AUQA or as a result of the needs of the ERA. The design schools’ response to this requirement will shape them and the outcomes of their work in the future years.

**Summary**

This work has examined the evolution of quality the history from the guild system and marking of artefacts to quality control, quality assurance and total quality management.

The work then discussed more explicitly a number of quality frameworks, the AQTF, AUQA, ERA, BEF, ISO and the defunct RQF. This was necessary to provide a logical understanding of the aims and principal practices of some of the frameworks used in education and the community. Frameworks offer an understanding of the mindset of the quality professionals, the gatekeepers of quality within organisations. Also it was important to understand the distribution of scarce resources to recognise the need to demonstrate public good, a scarce resource in itself, and if the meeting of this requirement would be at the expense of other scarce resources such as academic time and knowledge and public monies.

It had been argued that universities leveraged research in the form of esteem as a factor for international students to utilise when choosing an Australian university to apply to for studies. The available data showed that while the two ranking agencies looked at and assessed academic indicators from a number of perspectives to rank universities, students favoured institutes that were not ranked highly and therefore it was highly likely that other factors were considered other than research capabilities when choosing where to study. This idea was supported by the qualitative data that
showed design school academics placed a low value on industry leadership when assessing why universities carry out research.

A micro view of quality proceeded from this macro perspective. This perspective accounted for the concept of quality as a defining agent for organisations and institutes; how it affects customer and staff satisfaction and how it remains a driver of process improvement, compliance and regulation. These aspects of quality underpin the requirements of organisational risk mitigation, revenue maximisation and prestige.

An important aspect of this work is to understand the ability of policies and people to measure design within an academic forum and to examine the measurement tools used by some of the industry sectors that have design as a discipline was undertaken. These industries included the fashion, motor vehicle and construction sectors. This analysis demonstrated that the key criterion for design measurement was similar across design disciplines. This was expanded upon when examining design and the aspects that form design as a discipline.

An overview of the theories and major theorists assisted in fashioning a response to the question of what is design. Theories for design originate from many disciplines and are derived from engineering to economics; regardless of their background, all design practitioners in this part of the work acknowledged that design is a human trait that each of us possess to a greater or lesser extent. Furthermore, it was argued that the difference between a layperson and a designer is the formalised aspect of design, and that the body of knowledge currently amassed by designers and design theorists supports the argument that design is a discipline.

To understand design better, questionnaires were structured and conducted to address the theme of this work with the emphasis being on design school academics. It was decided to source both qualitative and quantitative data and to grant clarity to this data from the perspective of economic rationalism. The adoption of neoliberal theory and practices under the banner of economic rationalism in Australia was therefore expanded upon, so too the reasons for using comparative analysis for the assessment of data sets available from the survey. This analysis was focused on understanding the weight of biographical data brought simultaneously to the responses of design. Of
particular importance was the data on quality framework experience. This proved to be most insightful once applied to the response data.

Aged care was then assessed as it was argued that many similarities exist with the aims of the ERA and university research with regard to the government-funding model. The aged care model offers a great deal of data, which on examination is useful to design school academics that will be making applications for funding under the new ERA. The model also presents evidence of ongoing funding round application outcomes and how these may be pertinent for design schools and universities in Australia.

Throughout this work, Design Quality: Evaluating Quality as a Tool and the Potential Impact upon Design Outcomes of Quality Frameworks, I argue that the evaluation of quality will been pertinent to the design outcomes, especially for design schools that seek research funding under the new ERA. Also that design schools will have to meet, given the aged care model, an increasing level of regulation with required increases of compliance under the AUQA requirements. This work has demonstrated that design school academics are under-informed and too inexperienced to meet these outcomes. Consequently, the impact upon design if one accepts the argument that research leads to more and better design outcomes could be one of reduced funding and therefore a diminished capacity to design.

Based on this work, my findings and recommendations, this is a serious situation and one that universities must address immediately through leadership, education and a system of benchmarking and process improvement. Should this occur, design as a consequence will demonstrate improvements that are a result of a quality mindset. These will impact on universal knowledge as a result of second-generation design leveraging improved primary design knowledge.
Bibliography


Group of Eight. (2003). *Submission to Senate Employment, Workplace Relations and Education References Committee; Inquiry into higher education funding and regulatory legislation o. Document Number*


Appendices

Appendix a: Design Quantitative Questionnaire
Appendix b: Design Qualitative Questionnaire
Appendix c: Respondents’ Consent Letter
Appendix d: Mailing List Design Schools – 2007
Appendix e: Invitation to Participate in Interview – Qualitative
Appendix f: Invitation to Participate in Interview – Quantitative
Appendix g: Cronbach’s Alpha Item Consistency
Appendix h: Box Plots Potential Data Violations
Appendix i: Descriptive Statistics and Inter-correlations
Appendix j: Background Demographics Questionnaire
Appendix k: International Student Numbers
Appendix l: Ethical Approval
Appendix m: Ethical Declaration
Researchers:  Dr Deirdre Barron (SUT), Margaret Zeegers (UB) & Dianne Summons (SUT)
Faculty of Design, Swinburne University of Technology

Do Design School Academics think that Design can be measured within a Quality Framework?
My name is Dianne Summons I am undertaking research towards a PHD (Design)

My research title is: **Measuring Design: A methodology for determining and evaluating the aspects that establish the principles of design excellence across differing pedagogies and within a Research Quality Framework**

This project will look at the recent history of regulation in Australia with a focus on the proposed Research Quality Framework (RQF). One of the key attributes of the RQF is the need for research in a number of designated groupings to be measured. Australian University Design Faculty and Schools will be measured for future research funding via Group 13, “Creative arts, design and built environment”. As Research Design can be either written, artifact or a combination of both, this questionnaire will seek to understand if University Design Faculty and or School Academics think design can be measured and some of the potential results of the need to be measured.

In the collection, processing, analysing and storage of this data I will meet all the provisions of the Swinburne University of Technology “Guidelines for Ethics Approval of a Research Protocol”.

For the purpose of this questionnaire the following words mean:

- **Outcomes:** A result or end product

- **Measurable** Able to be assessed and rated for comparison

- **Excellence** That which is superior, quality

- **Quality Framework** A set of standards that seek to improve the quality and impact of what is being measured through rigorous application of an accurate assessment process that focuses on evidence
Do Design School Academics think that Design can be measured within a Quality Framework?

Using a 5-point Likert scale please circle the number next to the statement that either meets or is closest to your view.

<table>
<thead>
<tr>
<th>Statements</th>
<th>Totally disagree</th>
<th>Partially disagree</th>
<th>Neither agree nor disagree</th>
<th>Partially agree</th>
<th>Totally agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The outcomes of Design are measurable</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. Quality Frameworks ensure the measurement of Design by informed Practitioners</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. Quality Frameworks have the ability to measure Design accurately</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. Design elements can be measured within a Quality Framework</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. Design is poorer because of the need to comply with Quality Frameworks</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Do Design School Academics think that Design can be measured within a Quality Framework?

- Using a 5-point Likert scale please circle the number next to the statement that either meets or is closest to your view.

<table>
<thead>
<tr>
<th>Statements</th>
<th>Totally disagree</th>
<th>Partially disagree</th>
<th>Neither agree nor disagree</th>
<th>Partially agree</th>
<th>Totally agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Quality Frameworks limit innovation</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. Designers have to meet the conventions of their design discipline to produce a finished product</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. Quality Frameworks ensure that levels of excellence are met</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. Compliance with a set statement of quality parameters will improve the outcomes of Design</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. Quality Frameworks increase the excellence of design</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Do Design School Academics think that Design can be measured within a Quality Framework?

Background Information
Please tick the most appropriate for the following

<table>
<thead>
<tr>
<th>Design School participation</th>
<th>Experience with Quality Frameworks</th>
<th>Design Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Researcher/Tutor</td>
<td>None</td>
<td>Architecture</td>
</tr>
<tr>
<td>Lecturer</td>
<td>Novice</td>
<td>Communication Design</td>
</tr>
<tr>
<td>Senior Lecturer</td>
<td>Elementary</td>
<td>Digital Media</td>
</tr>
<tr>
<td>Program Coordinator</td>
<td>Intermediate</td>
<td>Fashion Design</td>
</tr>
<tr>
<td>Manager</td>
<td>Advanced</td>
<td>Graphic Design</td>
</tr>
<tr>
<td>Director</td>
<td>Expert</td>
<td>Industrial Design</td>
</tr>
<tr>
<td>Deputy Dean</td>
<td></td>
<td>Interior Architecture</td>
</tr>
<tr>
<td>Dean</td>
<td>Female</td>
<td>Landscape Architecture</td>
</tr>
<tr>
<td>Pro Vice Chancellor</td>
<td>Male</td>
<td>Multimedia Design</td>
</tr>
<tr>
<td>Vice Chancellor</td>
<td></td>
<td>Product Design Engineering</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Urban Planning</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other - Please specify</td>
</tr>
</tbody>
</table>
Researchers: Dr Deirdre Barron (SUT), Margaret Zeegers (UB) & Dianne Summons (SUT)
Faculty of Design, Swinburne University of Technology
Do Design School Academics think that Design can be measured within a Quality Framework?

Thank you for completing this survey. I would welcome your comments on the definitions in relation to the questionnaire and any other thoughts with regards to quality assurance and the impact on design.
Researchers: Dr Deirdre Barron (SUT), Margaret Zeegers (UB) & Dianne Summons (SUT)
Faculty of Design, Swinburne University of Technology

Do Design School Academics think that Design can be measured within a Quality Framework?
Do Design School Academics think that Design can be measured within a Quality Framework?

My name is Dianne Summons I am undertaking research towards a PHD (Design)

My research title is: Measuring Design: A methodology for determining and evaluating the aspects that establish the principles of design excellence across differing pedagogies and within a Research Quality Framework

This project will look at the recent history of regulation in Australia with a focus on the proposed Research Quality Framework (RQF). One of the key attributes of the RQF is the need for research in a number of designated groupings to be measured. Australian University Design Faculty and Schools will be measured for future research funding via Group 13, “Creative arts, design and built environment”. As Research Design can be either written, artifact or a combination of both, this questionnaire will seek to understand if University Design Faculty and or School Academics think design can be measured and some of the potential results of the need to be measured.

In the collection, processing, analysing and storage of this data I will meet all the provisions of the Swinburne University of Technology “Guidelines for Ethics Approval of a Research Protocol”.

For the purpose of this questionnaire the following words mean:

- **Outcomes**: A result or end product
- **Measurable**: Able to be assessed and rated for comparison
- **Excellence**: That which is superior, quality
- **Quality Framework**: A set of standards that seek to improve the quality and impact of what is being measured through rigorous application of an accurate assessment process that focuses on evidence
Do Design School Academics think that Design can be measured within a Quality Framework?

- Using a 5-point Likert scale please circle the number next to the statement that either meets or is closest to your view.

<table>
<thead>
<tr>
<th>Statements</th>
<th>Totally disagree</th>
<th>Partially disagree</th>
<th>Neither agree nor disagree</th>
<th>Partially agree</th>
<th>Totally agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The outcomes of Design are measurable</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. Quality Frameworks ensure the measurement of Design by informed Practitioners</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. Quality Frameworks have the ability to measure Design accurately</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. Design elements can be measured within a Quality Framework</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. Design is poorer because of the need to comply with Quality Frameworks</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Researchers: Dr Deirdre Barron (SUT), Margaret Zeegers (UB) & Dianne Summons (SUT)  
Faculty of Design, Swinburne University of Technology  
Do Design School Academics think that Design can be measured within a Quality Framework?

Using a 5-point Likert scale please circle the number next to the statement that either meets or is closest to your view.

<table>
<thead>
<tr>
<th>Statements</th>
<th>Totally disagree</th>
<th>Partially disagree</th>
<th>Neither agree nor disagree</th>
<th>Partially agree</th>
<th>Totally agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Quality Frameworks limit innovation</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. Designers have to meet the conventions of their design discipline to produce a finished product</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. Quality Frameworks ensure that levels of excellence are met</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. Compliance with a set statement of quality parameters will improve the outcomes of Design</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. Quality Frameworks increase the excellence of design</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Do Design School Academics think that Design can be measured within a Quality Framework?

Background Information
Please tick the most appropriate for the following

<table>
<thead>
<tr>
<th>Design School participation</th>
<th>Experience with Quality Frameworks</th>
<th>Design Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Researcher Tutor</td>
<td>None</td>
<td>Architecture</td>
</tr>
<tr>
<td>Lecturer</td>
<td>Novice</td>
<td>Communication Design</td>
</tr>
<tr>
<td>Senior Lecturer</td>
<td>Elementary</td>
<td>Digital Media</td>
</tr>
<tr>
<td>Program Coordinator</td>
<td>Intermediate</td>
<td>Fashion Design</td>
</tr>
<tr>
<td>Manager</td>
<td>Advanced</td>
<td>Graphic Design</td>
</tr>
<tr>
<td>Director</td>
<td>Expert</td>
<td>Industrial Design</td>
</tr>
<tr>
<td>Deputy Dean</td>
<td></td>
<td>Interior Architecture</td>
</tr>
<tr>
<td>Dean</td>
<td>Female</td>
<td>Landscape Architecture</td>
</tr>
<tr>
<td>Pro Vice Chancellor</td>
<td>Male</td>
<td>Multimedia Design</td>
</tr>
<tr>
<td>Vice Chancellor</td>
<td></td>
<td>Product Design Engineering</td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td>Urban Planning</td>
</tr>
</tbody>
</table>

Other - Please specify _________
Researchers: Dr Deirdre Barron (SUT), Margaret Zeegers (UB) & Dianne Summons (SUT)
Faculty of Design, Swinburne University of Technology

Do Design School Academics think that Design can be measured within a Quality Framework?

What does Design mean to you?
Researchers: Dr Deirdre Barron (SUT), Margaret Zeegers (UB) & Dianne Summons (SUT)
Faculty of Design, Swinburne University of Technology
Do Design School Academics think that Design can be measured within a Quality Framework?

How do you measure the elements that make up design?
Do Design School Academics think that Design can be measured within a Quality Framework?

Define Quality.
Do Design School Academics think that Design can be measured within a Quality Framework?

Why do Universities do research? What is the ultimate goal?
Researchers: Dr Deirdre Barron (SUT), Margaret Zeegers (UB) & Dianne Summons (SUT)
Faculty of Design, Swinburne University of Technology
Do Design School Academics think that Design can be measured within a Quality Framework?

Thank you for completing this survey. I would welcome your comments on the definitions in relation to the questionnaire and any other thoughts with regards to quality assurance and the impact on design.
Swinburne University of Technology - Faculty of Design  
Researchers: Dr Deirdre Barron (SUT)  
Margaret Zeegers (UB) &  
Dianne Summons (SUT)  

Do Design School Academics think that Design can be measured within a Quality Framework?  

Consent form – for participating in the research project of Dianne Summons  

I __________________________________ have had participation in the research project as titled above explained to me and I consent to participate in the questionnaire or interview for this project. I authorise the researcher or her assistant to use the completed questionnaire or interview to complete her research. I understand that I may withdraw my authority at any time without explanation or prejudice. This will include the exclusion of data collected prior to my withdrawal.  

Details of the manner in which this research will be conducted have been clearly explained to me. Questions that I have asked have been satisfactorily answered. I have also been supplied with information that I may keep outlining the function of the questionnaire or interview and the manner in which this information will be documented.  

I understand that the confidentiality of the information I provide will be safeguarded, subject to any legal requirements.  

I agree that data collected for the purposes of this research may be published or made accessible to other researchers that could benefit significantly from these findings under the condition that anonymity is maintained.  

I voluntarily agree to participate in this study, having read and understood the description of this study and of my rights as a participant.  

Name of participant:  

Signature: ___________________________ Date: ___________________________
<table>
<thead>
<tr>
<th>Design school Academics</th>
<th>Faculty/School</th>
<th>University</th>
<th>Address 1</th>
<th>Address 2</th>
<th>Add. 3</th>
<th>PC</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSA 1</td>
<td>Faculty of Built Environment, Art and Design</td>
<td>Curtin University of Technology</td>
<td>GPO Box U</td>
<td>Perth</td>
<td>WA</td>
<td>6845</td>
</tr>
<tr>
<td>DSA 2</td>
<td>Faculty of Built Environment, Art and Design</td>
<td>Curtin University of Technology</td>
<td>GPO Box U</td>
<td>Perth</td>
<td>WA</td>
<td>6845</td>
</tr>
<tr>
<td>DSA 3</td>
<td>Faculty of Built Environment, Art and Design</td>
<td>Curtin University of Technology</td>
<td>GPO Box U</td>
<td>Perth</td>
<td>WA</td>
<td>6845</td>
</tr>
<tr>
<td>DSA 4</td>
<td>Queensland College of Art</td>
<td>Griffith University</td>
<td>170 Kessels Road</td>
<td>Nathan</td>
<td>QLD</td>
<td>4111</td>
</tr>
<tr>
<td>DSA 5</td>
<td>Queensland College of Art</td>
<td>Griffith University</td>
<td>170 Kessels Road</td>
<td>Nathan</td>
<td>QLD</td>
<td>4111</td>
</tr>
<tr>
<td>DSA 6</td>
<td>Queensland College of Art</td>
<td>Griffith University</td>
<td>170 Kessels Road</td>
<td>Nathan</td>
<td>QLD</td>
<td>4111</td>
</tr>
<tr>
<td>DSA 7</td>
<td>Queensland College of Art</td>
<td>Griffith University</td>
<td>170 Kessels Road</td>
<td>Nathan</td>
<td>QLD</td>
<td>4111</td>
</tr>
<tr>
<td>DSA 8</td>
<td>Queensland College of Art</td>
<td>Griffith University</td>
<td>170 Kessels Road</td>
<td>Nathan</td>
<td>QLD</td>
<td>4111</td>
</tr>
<tr>
<td>DSA 9</td>
<td>Faculty of Humanities and Social Sciences</td>
<td>Larobe University</td>
<td>PO Box 199</td>
<td>Bendigo</td>
<td>VIC</td>
<td>3550</td>
</tr>
<tr>
<td>DSA 10</td>
<td>Faculty of Humanities and Social Sciences</td>
<td>Larobe University</td>
<td>PO Box 199</td>
<td>Bendigo</td>
<td>VIC</td>
<td>3550</td>
</tr>
<tr>
<td>DSA 11</td>
<td>Faculty of Humanities and Social Sciences</td>
<td>Larobe University</td>
<td>Bebtook Ave</td>
<td>Mildura</td>
<td>VIC</td>
<td>3502</td>
</tr>
<tr>
<td>DSA 12</td>
<td>Faculty of Humanities and Social Sciences</td>
<td>Larobe University</td>
<td>PO Box 199</td>
<td>Bendigo</td>
<td>VIC</td>
<td>3550</td>
</tr>
<tr>
<td>DSA 13</td>
<td>Faculty of Humanities and Social Sciences</td>
<td>Larobe University</td>
<td>PO Box 199</td>
<td>Bendigo</td>
<td>VIC</td>
<td>3550</td>
</tr>
<tr>
<td>DSA 14</td>
<td>Faculty of Art &amp; Design</td>
<td>Monash University</td>
<td>900 Dandenong Road</td>
<td>Caulfield East</td>
<td>VIC</td>
<td>3145</td>
</tr>
<tr>
<td>DSA 15</td>
<td>Faculty of Art &amp; Design</td>
<td>Monash University</td>
<td>900 Dandenong Road</td>
<td>Caulfield East</td>
<td>VIC</td>
<td>3145</td>
</tr>
<tr>
<td>DSA 16</td>
<td>Faculty of Art &amp; Design</td>
<td>Monash University</td>
<td>900 Dandenong Road</td>
<td>Caulfield East</td>
<td>VIC</td>
<td>3145</td>
</tr>
<tr>
<td>DSA 17</td>
<td>Faculty of Art &amp; Design</td>
<td>Monash University</td>
<td>900 Dandenong Road</td>
<td>Caulfield East</td>
<td>VIC</td>
<td>3145</td>
</tr>
<tr>
<td>DSA 18</td>
<td>Faculty of Art &amp; Design</td>
<td>Monash University</td>
<td>900 Dandenong Road</td>
<td>Caulfield East</td>
<td>VIC</td>
<td>3145</td>
</tr>
<tr>
<td>DSA 19</td>
<td>Faculty of Art &amp; Design</td>
<td>Monash University</td>
<td>900 Dandenong Road</td>
<td>Caulfield East</td>
<td>VIC</td>
<td>3145</td>
</tr>
<tr>
<td>DSA 20</td>
<td>Faculty of Art &amp; Design</td>
<td>Monash University</td>
<td>900 Dandenong Road</td>
<td>Caulfield East</td>
<td>VIC</td>
<td>3145</td>
</tr>
<tr>
<td>DSA 21</td>
<td>Faculty of Art &amp; Design</td>
<td>Monash University</td>
<td>900 Dandenong Road</td>
<td>Caulfield East</td>
<td>VIC</td>
<td>3145</td>
</tr>
<tr>
<td>DSA 22</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD</td>
<td>4000</td>
</tr>
<tr>
<td>DSA 23</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD 4000</td>
<td></td>
</tr>
<tr>
<td>DSA 24</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD 4000</td>
<td></td>
</tr>
<tr>
<td>DSA 25</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD 4000</td>
<td></td>
</tr>
<tr>
<td>DSA 26</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD 4000</td>
<td></td>
</tr>
<tr>
<td>DSA 27</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD 4000</td>
<td></td>
</tr>
<tr>
<td>DSA 28</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD 4000</td>
<td></td>
</tr>
<tr>
<td>DSA 29</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD 4000</td>
<td></td>
</tr>
<tr>
<td>DSA 30</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD 4000</td>
<td></td>
</tr>
<tr>
<td>DSA 31</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD 4000</td>
<td></td>
</tr>
<tr>
<td>DSA 32</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD 4000</td>
<td></td>
</tr>
<tr>
<td>DSA 33</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD 4000</td>
<td></td>
</tr>
<tr>
<td>DSA 34</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD 4000</td>
<td></td>
</tr>
<tr>
<td>DSA 35</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD 4000</td>
<td></td>
</tr>
<tr>
<td>DSA 36</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD 4000</td>
<td></td>
</tr>
<tr>
<td>DSA 37</td>
<td>Design and Social Context</td>
<td>Royal Melbourne Institute of Technology (RMIT)</td>
<td>360 Swanston Street</td>
<td>Melbourne</td>
<td>VIC 3000</td>
<td></td>
</tr>
<tr>
<td>DSA 38</td>
<td>Design and Social Context</td>
<td>Royal Melbourne Institute of Technology (RMIT)</td>
<td>360 Swanston Street</td>
<td>Melbourne</td>
<td>VIC</td>
<td>3000</td>
</tr>
<tr>
<td>DSA 39</td>
<td>Design and Social Context</td>
<td>Royal Melbourne Institute of Technology (RMIT)</td>
<td>360 Swanston Street</td>
<td>Melbourne</td>
<td>VIC</td>
<td>3000</td>
</tr>
<tr>
<td>DSA 40</td>
<td>Design and Social Context</td>
<td>Royal Melbourne Institute of Technology (RMIT)</td>
<td>GPO Box 2476V</td>
<td>Melbourne</td>
<td>VIC</td>
<td>3001</td>
</tr>
<tr>
<td>DSA 41</td>
<td>Design and Social Context</td>
<td>Royal Melbourne Institute of Technology (RMIT)</td>
<td>GPO Box 2476V</td>
<td>Melbourne</td>
<td>VIC</td>
<td>3001</td>
</tr>
<tr>
<td>DSA 42</td>
<td>Design and Social Context</td>
<td>Royal Melbourne Institute of Technology (RMIT)</td>
<td>360 Swanston Street</td>
<td>Melbourne</td>
<td>VIC</td>
<td>3000</td>
</tr>
<tr>
<td>DSA 43</td>
<td>Faculty of Design</td>
<td>Swinburne University of Technology</td>
<td>144 High Street</td>
<td>Prahran</td>
<td>VIC</td>
<td>3181</td>
</tr>
<tr>
<td>DSA 44</td>
<td>Faculty of Design</td>
<td>Swinburne University of Technology</td>
<td>144 High Street</td>
<td>Prahran</td>
<td>VIC</td>
<td>3181</td>
</tr>
<tr>
<td>DSA 45</td>
<td>Faculty of Design</td>
<td>Swinburne University of Technology</td>
<td>144 High Street</td>
<td>Prahran</td>
<td>VIC</td>
<td>3181</td>
</tr>
<tr>
<td>DSA 46</td>
<td>Faculty of Design</td>
<td>Swinburne University of Technology</td>
<td>144 High Street</td>
<td>Prahran</td>
<td>VIC</td>
<td>3181</td>
</tr>
<tr>
<td>DSA 47</td>
<td>Faculty of Design</td>
<td>Swinburne University of Technology</td>
<td>144 High Street</td>
<td>Prahran</td>
<td>VIC</td>
<td>3181</td>
</tr>
<tr>
<td>DSA 48</td>
<td>Faculty of Design</td>
<td>Swinburne University of Technology</td>
<td>144 High Street</td>
<td>Prahran</td>
<td>VIC</td>
<td>3181</td>
</tr>
<tr>
<td>DSA 49</td>
<td>Faculty of Arts - Centre for New Media Arts</td>
<td>The Australian National University</td>
<td>Peter Karmel Building 121, ANU Childers St</td>
<td>Canberra</td>
<td>ACT</td>
<td>0200</td>
</tr>
<tr>
<td>DSA 50</td>
<td>Faculty of Arts - Centre for New Media Arts</td>
<td>The Australian National University</td>
<td>Peter Karmel Building 121, ANU Childers St</td>
<td>Canberra</td>
<td>ACT</td>
<td>0200</td>
</tr>
<tr>
<td>DSA 51</td>
<td>Faculty of Arts - Centre for New Media Arts</td>
<td>The Australian National University</td>
<td>Building 22 ANU</td>
<td>Canberra</td>
<td>ACT</td>
<td>0200</td>
</tr>
<tr>
<td>DSA 52</td>
<td>Faculty of Arts - Centre for New Media Arts</td>
<td>The Australian National University</td>
<td>Building 22 ANU</td>
<td>Canberra</td>
<td>ACT</td>
<td>0200</td>
</tr>
<tr>
<td>DSA 53</td>
<td>Faculty of Arts - Centre for New Media Arts</td>
<td>The Australian National University</td>
<td>Peter Karmel Building 121, ANU Childers St</td>
<td>Canberra</td>
<td>ACT</td>
<td>0200</td>
</tr>
<tr>
<td>DSA 54</td>
<td>Architecture Land Architecture and Urban Design</td>
<td>The University of Adelaide</td>
<td>School of Architecture Landscape Architecture and Urban Design, UA</td>
<td>Adelaide</td>
<td>SA</td>
<td>5005</td>
</tr>
<tr>
<td>DSA 55</td>
<td>Architecture Land Architecture and Urban Design</td>
<td>The University of Adelaide</td>
<td>School of Architecture Landscape Architecture and Urban Design, UA</td>
<td>Adelaide</td>
<td>SA</td>
<td>5005</td>
</tr>
<tr>
<td>DSA 56</td>
<td>Architecture Land Architecture and Urban Design</td>
<td>The University of Adelaide</td>
<td>School of Architecture Landscape Architecture and Urban Design, UA</td>
<td>Adelaide</td>
<td>SA</td>
<td>5005</td>
</tr>
<tr>
<td>DSA 57</td>
<td>Health Design and Science</td>
<td>The University of Canberra</td>
<td>Haydon Drive</td>
<td>Belconnen</td>
<td>ACT</td>
<td>2601</td>
</tr>
<tr>
<td>DSA 58</td>
<td>Health Design and Science</td>
<td>The University of Canberra</td>
<td>Haydon Drive</td>
<td>Belconnen</td>
<td>ACT</td>
<td>2601</td>
</tr>
<tr>
<td>DSA 59</td>
<td>Architecture, Building and Planning, Victorian College of the Arts</td>
<td>The University of Melbourne</td>
<td>Grattan Street</td>
<td>Parkville</td>
<td>VIC</td>
<td>3052</td>
</tr>
<tr>
<td>DSA 60</td>
<td>Architecture, Building and Planning, Victorian College of the Arts</td>
<td>The University of Melbourne</td>
<td>Grattan Street</td>
<td>Parkville</td>
<td>VIC</td>
<td>3052</td>
</tr>
<tr>
<td>DSA 61</td>
<td>Architecture, Building and Planning, Victorian College of the Arts</td>
<td>The University of Melbourne</td>
<td>Grattan Street</td>
<td>Parkville</td>
<td>VIC</td>
<td>3052</td>
</tr>
<tr>
<td>DSA 62</td>
<td>Architecture, Building and Planning, Victorian College of the Arts</td>
<td>The University of Melbourne</td>
<td>Grattan Street</td>
<td>Parkville</td>
<td>VIC</td>
<td>3052</td>
</tr>
<tr>
<td>DSA 63</td>
<td>Architecture, Building and Planning, Victorian College of the Arts</td>
<td>The University of Melbourne</td>
<td>Grattan Street</td>
<td>Parkville</td>
<td>VIC</td>
<td>3052</td>
</tr>
<tr>
<td>DSA 64</td>
<td>Architecture, Building and Planning, Victorian College of the Arts</td>
<td>The University of Melbourne</td>
<td>Grattan Street</td>
<td>Parkville</td>
<td>VIC</td>
<td>3052</td>
</tr>
<tr>
<td>DSA 65</td>
<td>College of Fine Arts &amp; Faculty of the Built Environment</td>
<td>The University of New South Wales (UNSW)</td>
<td>Anzac Parade</td>
<td>Kensington</td>
<td>NSW</td>
<td>2033</td>
</tr>
<tr>
<td>DSA 66</td>
<td>College of Fine Arts &amp; Faculty of the Built Environment</td>
<td>The University of New South Wales (UNSW)</td>
<td>Anzac Parade</td>
<td>Kensington</td>
<td>NSW</td>
<td>2033</td>
</tr>
<tr>
<td>DSA 67</td>
<td>College of Fine Arts &amp; Faculty of the Built Environment</td>
<td>The University of New South Wales (UNSW)</td>
<td>Anzac Parade</td>
<td>Kensington</td>
<td>NSW</td>
<td>2033</td>
</tr>
<tr>
<td>DSA 68</td>
<td>School of Architecture and Built Environment</td>
<td>The University of Newcastle</td>
<td>University Drive</td>
<td>Callaghan</td>
<td>NSW</td>
<td>2308</td>
</tr>
<tr>
<td>DSA 69</td>
<td>Faculty of Engineering, Physical Sciences and Architecture</td>
<td>The University of Queensland</td>
<td>JD Storey Bldg</td>
<td>St Lucia</td>
<td>QLD</td>
<td>4067</td>
</tr>
<tr>
<td>DSA 70</td>
<td>Division of Education, Arts and Social Sciences</td>
<td>The University of South Australia</td>
<td>GPO Box 2471</td>
<td>Adelaide</td>
<td>SA</td>
<td>5001</td>
</tr>
<tr>
<td>DSA 71</td>
<td>Division of Education, Arts and Social Sciences</td>
<td>The University of South Australia</td>
<td>GPO Box 2471</td>
<td>Adelaide</td>
<td>SA</td>
<td>5001</td>
</tr>
<tr>
<td>DSA 72</td>
<td>Division of Education, Arts and Social Sciences</td>
<td>The University of South Australia</td>
<td>GPO Box 2471</td>
<td>Adelaide</td>
<td>SA 5001</td>
<td></td>
</tr>
<tr>
<td>DSA 73</td>
<td>Division of Education, Arts and Social Sciences</td>
<td>The University of South Australia</td>
<td>GPO Box 2471</td>
<td>Adelaide</td>
<td>SA 5001</td>
<td></td>
</tr>
<tr>
<td>DSA 74</td>
<td>Division of Education, Arts and Social Sciences</td>
<td>The University of South Australia</td>
<td>GPO Box 2471</td>
<td>Adelaide</td>
<td>SA 5001</td>
<td></td>
</tr>
<tr>
<td>DSA 75</td>
<td>Division of Education, Arts and Social Sciences</td>
<td>The University of South Australia</td>
<td>GPO Box 2471</td>
<td>Adelaide</td>
<td>SA 5001</td>
<td></td>
</tr>
<tr>
<td>DSA 76</td>
<td>Division of Education, Arts and Social Sciences</td>
<td>The University of South Australia</td>
<td>GPO Box 2471</td>
<td>Adelaide</td>
<td>SA 5001</td>
<td></td>
</tr>
<tr>
<td>DSA 77</td>
<td>Bachelor of Design in Architecture/Bachelor of Design Computing</td>
<td>The University of Sydney</td>
<td>148 City Road</td>
<td>Darlington</td>
<td>NSW 2570</td>
<td></td>
</tr>
<tr>
<td>DSA 78</td>
<td>Bachelor of Design in Architecture/Bachelor of Design Computing</td>
<td>The University of Sydney</td>
<td>148 City Road</td>
<td>Darlington</td>
<td>NSW 2570</td>
<td></td>
</tr>
<tr>
<td>DSA 79</td>
<td>Bachelor of Design in Architecture/Bachelor of Design Computing</td>
<td>The University of Sydney</td>
<td>148 City Road</td>
<td>Darlington</td>
<td>NSW 2570</td>
<td></td>
</tr>
<tr>
<td>DSA 80</td>
<td>Bachelor of Design in Architecture/Bachelor of Design Computing</td>
<td>The University of Sydney</td>
<td>148 City Road</td>
<td>Darlington</td>
<td>NSW 2570</td>
<td></td>
</tr>
<tr>
<td>DSA 81</td>
<td>Bachelor of Design in Architecture/Bachelor of Design Computing</td>
<td>The University of Sydney</td>
<td>148 City Road</td>
<td>Darlington</td>
<td>NSW 2570</td>
<td></td>
</tr>
<tr>
<td>DSA 82</td>
<td>School of Design</td>
<td>The University of Technology Sydney</td>
<td>Faculty of DAB, PO Box 123</td>
<td>Broadway</td>
<td>NSW 2007</td>
<td></td>
</tr>
<tr>
<td>DSA 83</td>
<td>School of Design</td>
<td>The University of Technology Sydney</td>
<td>Faculty of DAB, PO Box 123</td>
<td>Broadway</td>
<td>NSW 2007</td>
<td></td>
</tr>
<tr>
<td>DSA 84</td>
<td>School of Design</td>
<td>The University of Technology Sydney</td>
<td>Faculty of DAB, PO Box 123</td>
<td>Broadway</td>
<td>NSW 2007</td>
<td></td>
</tr>
<tr>
<td>DSA 85</td>
<td>School of Design</td>
<td>The University of Technology Sydney</td>
<td>Faculty of DAB, PO Box 123</td>
<td>Broadway</td>
<td>NSW 2007</td>
<td></td>
</tr>
<tr>
<td>DSA 86</td>
<td>School of the Built Environment</td>
<td>The University of Technology Sydney</td>
<td>Faculty of DAB, PO Box 123</td>
<td>Broadway</td>
<td>NSW 2007</td>
<td></td>
</tr>
<tr>
<td>DSA 87</td>
<td>Faculty of Design, Architecture and Building</td>
<td>The University of Technology Sydney</td>
<td>Faculty of DAB, PO Box 123</td>
<td>Broadway</td>
<td>NSW 2007</td>
<td></td>
</tr>
<tr>
<td>DSA</td>
<td>School of Architecture</td>
<td>The University of Technology Sydney</td>
<td>Faculty of DAB, PO Box 123</td>
<td>Broadway</td>
<td>NSW</td>
<td>2007</td>
</tr>
<tr>
<td>-----</td>
<td>------------------------</td>
<td>-------------------------------------</td>
<td>-----------------------------</td>
<td>---------</td>
<td>-----</td>
<td>------</td>
</tr>
<tr>
<td>DSA</td>
<td>School of Architecture</td>
<td>The University of Technology Sydney</td>
<td>Faculty of DAB, PO Box 123</td>
<td>Broadway</td>
<td>NSW</td>
<td>2007</td>
</tr>
<tr>
<td>DSA</td>
<td>School of Design</td>
<td>The University of Technology Sydney</td>
<td>Faculty of DAB, PO Box 123</td>
<td>Broadway</td>
<td>NSW</td>
<td>2007</td>
</tr>
<tr>
<td>DSA</td>
<td>Faculty of Architecture, Landscape and Visual Arts</td>
<td>The University of Western Australia</td>
<td>35 Stirling Highway</td>
<td>Crawley</td>
<td>WA</td>
<td>6009</td>
</tr>
<tr>
<td>DSA</td>
<td>Faculty of Architecture, Landscape and Visual Arts</td>
<td>The University of Western Australia</td>
<td>35 Stirling Highway</td>
<td>Crawley</td>
<td>WA</td>
<td>6009</td>
</tr>
<tr>
<td>DSA</td>
<td>Faculty of Architecture, Landscape and Visual Arts</td>
<td>The University of Western Australia</td>
<td>35 Stirling Highway</td>
<td>Crawley</td>
<td>WA</td>
<td>6009</td>
</tr>
<tr>
<td>DSA</td>
<td>Faculty of Architecture, Landscape and Visual Arts</td>
<td>The University of Western Australia</td>
<td>35 Stirling Highway</td>
<td>Crawley</td>
<td>WA</td>
<td>6009</td>
</tr>
<tr>
<td>DSA</td>
<td>School of Communication Arts</td>
<td>The University of Western Sydney (UWS)</td>
<td>UWS, Locked Bag 1797</td>
<td>Penrith South DC</td>
<td>NSW</td>
<td>1797</td>
</tr>
<tr>
<td>DSA</td>
<td>School of Communication Arts</td>
<td>The University of Western Sydney (UWS)</td>
<td>UWS, Locked Bag 1797</td>
<td>Penrith South DC</td>
<td>NSW</td>
<td>1797</td>
</tr>
<tr>
<td>DSA</td>
<td>School of Communication Arts</td>
<td>The University of Western Sydney (UWS)</td>
<td>UWS, Locked Bag 1797</td>
<td>Penrith South DC</td>
<td>NSW</td>
<td>1797</td>
</tr>
<tr>
<td>DSA</td>
<td>School of Communication Arts</td>
<td>The University of Western Sydney (UWS)</td>
<td>UWS, Locked Bag 1797</td>
<td>Penrith South DC</td>
<td>NSW</td>
<td>1797</td>
</tr>
<tr>
<td>DSA</td>
<td>Faculty of Built Environment, Art and Design</td>
<td>Curtin University of Technology</td>
<td>GPO Box U</td>
<td>Perth</td>
<td>WA</td>
<td>6845</td>
</tr>
<tr>
<td>DSA</td>
<td>Faculty of Built Environment, Art and Design</td>
<td>Curtin University of Technology</td>
<td>GPO Box U</td>
<td>Perth</td>
<td>WA</td>
<td>6845</td>
</tr>
<tr>
<td>DSA</td>
<td>Queensland College of Art</td>
<td>Griffith University</td>
<td>170 Kessels Road</td>
<td>Nathan</td>
<td>QLD</td>
<td>4111</td>
</tr>
<tr>
<td>DSA</td>
<td>Queensland College of Art</td>
<td>Griffith University</td>
<td>170 Kessels Road</td>
<td>Nathan</td>
<td>QLD</td>
<td>4111</td>
</tr>
<tr>
<td>DSA</td>
<td>Faculty of Humanities and Social Sciences</td>
<td>Larobe University</td>
<td>PO Box 199</td>
<td>Bendigo</td>
<td>VIC</td>
<td>3550</td>
</tr>
<tr>
<td>DSA</td>
<td>Faculty of Humanities and Social Sciences</td>
<td>Larobe University</td>
<td>Bebtook Ave</td>
<td>Mildura</td>
<td>VIC</td>
<td>3502</td>
</tr>
<tr>
<td>DSA</td>
<td>Faculty of Humanities and Social Sciences</td>
<td>Larobe University</td>
<td>PO Box 199</td>
<td>Bendigo</td>
<td>VIC</td>
<td>3550</td>
</tr>
<tr>
<td>DSA</td>
<td>Faculty of Art &amp; Design</td>
<td>Monash University</td>
<td>900 Dandenong Road</td>
<td>Caulfield East</td>
<td>VIC</td>
<td>3145</td>
</tr>
<tr>
<td>DSA</td>
<td>Faculty of Art &amp; Design</td>
<td>Monash University</td>
<td>Northways Road</td>
<td>Churchill</td>
<td>VIC</td>
<td>3842</td>
</tr>
<tr>
<td>DSA 108</td>
<td>Faculty of Art &amp; Design</td>
<td>Monash University</td>
<td>900 Dandenong Road</td>
<td>Caulfield East</td>
<td>VIC</td>
<td>3145</td>
</tr>
<tr>
<td>--------</td>
<td>-----------------------</td>
<td>------------------</td>
<td>-------------------</td>
<td>---------------</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>DSA 109</td>
<td>Faculty of Art &amp; Design</td>
<td>Monash University</td>
<td>900 Dandenong Road</td>
<td>Caulfield East</td>
<td>VIC</td>
<td>3145</td>
</tr>
<tr>
<td>DSA 110</td>
<td>Faculty of Art &amp; Design</td>
<td>Monash University</td>
<td>900 Dandenong Road</td>
<td>Caulfield East</td>
<td>VIC</td>
<td>3145</td>
</tr>
<tr>
<td>DSA 111</td>
<td>Faculty of Art &amp; Design</td>
<td>Monash University</td>
<td>900 Dandenong Road</td>
<td>Caulfield East</td>
<td>VIC</td>
<td>3145</td>
</tr>
<tr>
<td>DSA 112</td>
<td>Faculty of Art &amp; Design</td>
<td>Monash University</td>
<td>900 Dandenong Road</td>
<td>Caulfield East</td>
<td>VIC</td>
<td>3145</td>
</tr>
<tr>
<td>DSA 113</td>
<td>Faculty of Art &amp; Design</td>
<td>Monash University</td>
<td>900 Dandenong Road</td>
<td>Caulfield East</td>
<td>VIC</td>
<td>3145</td>
</tr>
<tr>
<td>DSA 114</td>
<td>Faculty of Art &amp; Design</td>
<td>Monash University</td>
<td>900 Dandenong Road</td>
<td>Caulfield East</td>
<td>VIC</td>
<td>3145</td>
</tr>
<tr>
<td>DSA 115</td>
<td>Faculty of Art &amp; Design</td>
<td>Monash University</td>
<td>900 Dandenong Road</td>
<td>Caulfield East</td>
<td>VIC</td>
<td>3145</td>
</tr>
<tr>
<td>DSA 116</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD</td>
<td>4000</td>
</tr>
<tr>
<td>DSA 117</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD</td>
<td>4000</td>
</tr>
<tr>
<td>DSA 118</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD</td>
<td>4000</td>
</tr>
<tr>
<td>DSA 119</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD</td>
<td>4000</td>
</tr>
<tr>
<td>DSA 120</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD</td>
<td>4000</td>
</tr>
<tr>
<td>DSA 121</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD</td>
<td>4000</td>
</tr>
<tr>
<td>DSA 122</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD</td>
<td>4000</td>
</tr>
<tr>
<td>DSA 123</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD</td>
<td>4000</td>
</tr>
<tr>
<td>DSA 124</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD</td>
<td>4000</td>
</tr>
<tr>
<td>DSA 125</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD</td>
<td>4000</td>
</tr>
<tr>
<td>DSA 126</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD</td>
<td>4000</td>
</tr>
<tr>
<td>DSA 127</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD 4000</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>---------------------------------------------</td>
<td>-------------------------------------------</td>
<td>----------------</td>
<td>----------</td>
<td>----------</td>
<td></td>
</tr>
<tr>
<td>DSA 128</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD 4000</td>
<td></td>
</tr>
<tr>
<td>DSA 129</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD 4000</td>
<td></td>
</tr>
<tr>
<td>DSA 130</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD 4000</td>
<td></td>
</tr>
<tr>
<td>DSA 131</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD 4000</td>
<td></td>
</tr>
<tr>
<td>DSA 132</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD 4000</td>
<td></td>
</tr>
<tr>
<td>DSA 133</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD 4000</td>
<td></td>
</tr>
<tr>
<td>DSA 134</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD 4000</td>
<td></td>
</tr>
<tr>
<td>DSA 135</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD 4000</td>
<td></td>
</tr>
<tr>
<td>DSA 136</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD 4000</td>
<td></td>
</tr>
<tr>
<td>DSA 137</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD 4000</td>
<td></td>
</tr>
<tr>
<td>DSA 138</td>
<td>Faculty of Built Environment and Engineering</td>
<td>Queensland University of Technology (QUT)</td>
<td>2 George Street</td>
<td>Brisbane</td>
<td>QLD 4000</td>
<td></td>
</tr>
<tr>
<td>DSA 139</td>
<td>Design and Social Context</td>
<td>Royal Melbourne Institute of Technology (RMIT)</td>
<td>360 Swanston Street</td>
<td>Melbourne</td>
<td>VIC 3000</td>
<td></td>
</tr>
<tr>
<td>DSA 140</td>
<td>Design and Social Context</td>
<td>Royal Melbourne Institute of Technology (RMIT)</td>
<td>360 Swanston Street</td>
<td>Melbourne</td>
<td>VIC 3000</td>
<td></td>
</tr>
<tr>
<td>DSA 141</td>
<td>Design and Social Context</td>
<td>Royal Melbourne Institute of Technology (RMIT)</td>
<td>360 Swanston Street</td>
<td>Melbourne</td>
<td>VIC 3000</td>
<td></td>
</tr>
<tr>
<td>DSA 142</td>
<td>Design and Social Context</td>
<td>Royal Melbourne Institute of Technology (RMIT)</td>
<td>360 Swanston Street</td>
<td>Melbourne</td>
<td>VIC</td>
<td>3000</td>
</tr>
<tr>
<td>DSA 143</td>
<td>Design and Social Context</td>
<td>Royal Melbourne Institute of Technology (RMIT)</td>
<td>360 Swanston Street</td>
<td>Melbourne</td>
<td>VIC</td>
<td>3000</td>
</tr>
<tr>
<td>DSA 144</td>
<td>Design and Social Context</td>
<td>Royal Melbourne Institute of Technology (RMIT)</td>
<td>360 Swanston Street</td>
<td>Melbourne</td>
<td>VIC</td>
<td>3000</td>
</tr>
<tr>
<td>DSA 145</td>
<td>Design and Social Context</td>
<td>Royal Melbourne Institute of Technology (RMIT)</td>
<td>360 Swanston Street</td>
<td>Melbourne</td>
<td>VIC</td>
<td>3000</td>
</tr>
<tr>
<td>DSA 146</td>
<td>Design and Social Context</td>
<td>Royal Melbourne Institute of Technology (RMIT)</td>
<td>360 Swanston Street</td>
<td>Melbourne</td>
<td>VIC</td>
<td>3000</td>
</tr>
<tr>
<td>DSA 147</td>
<td>Faculty of Design</td>
<td>Swinburne University of Technology</td>
<td>144 High Street</td>
<td>Prahran</td>
<td>VIC</td>
<td>3181</td>
</tr>
<tr>
<td>DSA 148</td>
<td>Faculty of Design</td>
<td>Swinburne University of Technology</td>
<td>144 High Street</td>
<td>Prahran</td>
<td>VIC</td>
<td>3181</td>
</tr>
<tr>
<td>DSA 149</td>
<td>Faculty of Design</td>
<td>Swinburne University of Technology</td>
<td>144 High Street</td>
<td>Prahran</td>
<td>VIC</td>
<td>3181</td>
</tr>
<tr>
<td>DSA 150</td>
<td>Faculty of Design</td>
<td>Swinburne University of Technology</td>
<td>144 High Street</td>
<td>Prahran</td>
<td>VIC</td>
<td>3181</td>
</tr>
<tr>
<td>DSA 151</td>
<td>Faculty of Design</td>
<td>Swinburne University of Technology</td>
<td>144 High Street</td>
<td>Prahran</td>
<td>VIC</td>
<td>3181</td>
</tr>
<tr>
<td>DSA 152</td>
<td>Faculty of Design</td>
<td>Swinburne University of Technology</td>
<td>144 High Street</td>
<td>Prahran</td>
<td>VIC</td>
<td>3181</td>
</tr>
<tr>
<td>DSA 153</td>
<td>Faculty of Design</td>
<td>Swinburne University of Technology</td>
<td>144 High Street</td>
<td>Prahran</td>
<td>VIC</td>
<td>3181</td>
</tr>
<tr>
<td>DSA 154</td>
<td>Faculty of Design</td>
<td>Swinburne University of Technology</td>
<td>144 High Street</td>
<td>Prahran</td>
<td>VIC</td>
<td>3181</td>
</tr>
<tr>
<td>DSA 155</td>
<td>Faculty of Design</td>
<td>Swinburne University of Technology</td>
<td>144 High Street</td>
<td>Prahran</td>
<td>VIC</td>
<td>3181</td>
</tr>
<tr>
<td>DSA 156</td>
<td>Faculty of Arts - Centre for New Media Arts</td>
<td>The Australian National University</td>
<td>Peter Karmel Building 121, ANU Childers St</td>
<td>Canberra</td>
<td>ACT</td>
<td>0200</td>
</tr>
<tr>
<td>DSA 157</td>
<td>Faculty of Arts - Centre for New Media Arts</td>
<td>The Australian National University</td>
<td>Peter Karmel Building 121, ANU Childers St</td>
<td>Canberra</td>
<td>ACT</td>
<td>0200</td>
</tr>
<tr>
<td>DSA 158</td>
<td>Architecture Land Architecture and Urban Design</td>
<td>The University of Adelaide</td>
<td>School of Architecture Landscape Architecture and Urban Design, UA</td>
<td>Adelaide</td>
<td>SA</td>
<td>5005</td>
</tr>
<tr>
<td>DSA 159</td>
<td>Architecture Land Architecture and Urban Design</td>
<td>The University of Adelaide</td>
<td>School of Architecture Landscape Architecture and Urban Design, UA</td>
<td>Adelaide</td>
<td>SA</td>
<td>5005</td>
</tr>
<tr>
<td>DSA 160</td>
<td>Architecture Land Architecture and Urban Design</td>
<td>The University of Adelaide</td>
<td>School of Architecture Landscape Architecture and Urban Design, UA</td>
<td>Adelaide</td>
<td>SA</td>
<td>5005</td>
</tr>
<tr>
<td>DSA 161</td>
<td>Architecture Land Architecture and Urban Design</td>
<td>The University of Adelaide</td>
<td>School of Architecture Landscape Architecture and Urban Design, UA</td>
<td>Adelaide</td>
<td>SA</td>
<td>5005</td>
</tr>
<tr>
<td>DSA 162</td>
<td>Architecture Land Architecture and Urban Design</td>
<td>The University of Adelaide</td>
<td>School of Architecture Landscape Architecture and Urban Design, UA</td>
<td>Adelaide</td>
<td>SA</td>
<td>5005</td>
</tr>
<tr>
<td>DSA 163</td>
<td>Health Design and Science</td>
<td>The University of Canberra</td>
<td>Haydon Drive</td>
<td>Belconnen</td>
<td>ACT</td>
<td>2601</td>
</tr>
<tr>
<td>DSA 164</td>
<td>Health Design and Science</td>
<td>The University of Canberra</td>
<td>Haydon Drive</td>
<td>Belconnen</td>
<td>ACT</td>
<td>2601</td>
</tr>
<tr>
<td>DSA 165</td>
<td>Health Design and Science</td>
<td>The University of Canberra</td>
<td>Haydon Drive</td>
<td>Belconnen</td>
<td>ACT</td>
<td>2601</td>
</tr>
<tr>
<td>DSA 166</td>
<td>Architecture, Building and Planning, Victorian College of the Arts</td>
<td>The University of Melbourne</td>
<td>Grattan Street</td>
<td>Parkville</td>
<td>VIC</td>
<td>3052</td>
</tr>
<tr>
<td>DSA 167</td>
<td>Architecture, Building and Planning, Victorian College of the Arts</td>
<td>The University of Melbourne</td>
<td>Grattan Street</td>
<td>Parkville</td>
<td>VIC</td>
<td>3052</td>
</tr>
<tr>
<td>DSA 168</td>
<td>Architecture, Building and Planning, Victorian College of the Arts</td>
<td>The University of Melbourne</td>
<td>Grattan Street</td>
<td>Parkville</td>
<td>VIC</td>
<td>3052</td>
</tr>
<tr>
<td>DSA 169</td>
<td>Architecture, Building and Planning, Victorian College of the Arts</td>
<td>The University of Melbourne</td>
<td>Grattan Street</td>
<td>Parkville</td>
<td>VIC</td>
<td>3052</td>
</tr>
<tr>
<td>DSA 170</td>
<td>Architecture, Building and Planning, Victorian College of the Arts</td>
<td>The University of Melbourne</td>
<td>Grattan Street</td>
<td>Parkville</td>
<td>VIC</td>
<td>3052</td>
</tr>
<tr>
<td>DSA 171</td>
<td>Architecture, Building and Planning, Victorian College of the Arts</td>
<td>The University of Melbourne</td>
<td>Grattan Street</td>
<td>Parkville</td>
<td>VIC</td>
<td>3052</td>
</tr>
<tr>
<td>DSA 172</td>
<td>Architecture, Building and Planning, Victorian College of the Arts</td>
<td>The University of Melbourne</td>
<td>Grattan Street</td>
<td>Parkville</td>
<td>VIC</td>
<td>3052</td>
</tr>
<tr>
<td>DSA 173</td>
<td>Architecture, Building and Planning, Victorian College of the Arts</td>
<td>The University of Melbourne</td>
<td>Grattan Street</td>
<td>Parkville</td>
<td>VIC</td>
<td>3052</td>
</tr>
<tr>
<td>DSA 174</td>
<td>Architecture, Building and Planning, Victorian College of the Arts</td>
<td>The University of Melbourne</td>
<td>Grattan Street</td>
<td>Parkville</td>
<td>VIC</td>
<td>3052</td>
</tr>
<tr>
<td>DSA 175</td>
<td>Architecture, Building and Planning, Victorian College of the Arts</td>
<td>The University of Melbourne</td>
<td>Grattan Street</td>
<td>Parkville</td>
<td>VIC</td>
<td>3052</td>
</tr>
<tr>
<td>DSA 176</td>
<td>Faculty of Engineering and Built Environment</td>
<td>The University of Newcastle</td>
<td>University Drive</td>
<td>Callaghan</td>
<td>NSW</td>
<td>2308</td>
</tr>
<tr>
<td>DSA 177</td>
<td>Division of Education, Arts and Social Sciences</td>
<td>The University of South Australia</td>
<td>GPO Box 2471</td>
<td>Adelaide</td>
<td>SA</td>
<td>5001</td>
</tr>
<tr>
<td>DSA 178</td>
<td>Division of Education, Arts and Social Sciences</td>
<td>The University of South Australia</td>
<td>GPO Box 2471</td>
<td>Adelaide</td>
<td>SA</td>
<td>5001</td>
</tr>
<tr>
<td>DSA 179</td>
<td>Division of Education, Arts and Social Sciences</td>
<td>The University of South Australia</td>
<td>GPO Box 2471</td>
<td>Adelaide</td>
<td>SA</td>
<td>5001</td>
</tr>
<tr>
<td>DSA 180</td>
<td>Division of Education, Arts and Social Sciences</td>
<td>The University of South Australia</td>
<td>GPO Box 2471</td>
<td>Adelaide</td>
<td>SA</td>
<td>5001</td>
</tr>
<tr>
<td>DSA 181</td>
<td>Division of Education, Arts and Social Sciences</td>
<td>The University of South Australia</td>
<td>GPO Box 2471</td>
<td>Adelaide</td>
<td>SA</td>
<td>5001</td>
</tr>
<tr>
<td>DSA 182</td>
<td>Bachelor of Design in Architecture/Bachelor of Design Computing</td>
<td>The University of Sydney</td>
<td>148 City Road</td>
<td>Darlington</td>
<td>NSW</td>
<td>2570</td>
</tr>
<tr>
<td>DSA 183</td>
<td>Bachelor of Design in Architecture/Bachelor of Design Computing</td>
<td>The University of Sydney</td>
<td>148 City Road</td>
<td>Darlington</td>
<td>NSW</td>
<td>2570</td>
</tr>
<tr>
<td>DSA 184</td>
<td>Bachelor of Design in Architecture/Bachelor of Design Computing</td>
<td>The University of Sydney</td>
<td>148 City Road</td>
<td>Darlington</td>
<td>NSW</td>
<td>2570</td>
</tr>
<tr>
<td>DSA 185</td>
<td>Bachelor of Design in Architecture/Bachelor of Design Computing</td>
<td>The University of Sydney</td>
<td>148 City Road</td>
<td>Darlington</td>
<td>NSW</td>
<td>2570</td>
</tr>
<tr>
<td>DSA 186</td>
<td>School of the Built Environment</td>
<td>The University of Technology Sydney</td>
<td>Faculty of DAB, PO Box 123</td>
<td>Broadway</td>
<td>NSW</td>
<td>2007</td>
</tr>
<tr>
<td>DSA 187</td>
<td>School of Design</td>
<td>The University of Technology Sydney</td>
<td>Faculty of DAB, PO Box 123</td>
<td>Broadway</td>
<td>NSW</td>
<td>2007</td>
</tr>
<tr>
<td>DSA 188</td>
<td>School of Architecture</td>
<td>The University of Technology Sydney</td>
<td>Faculty of DAB, PO Box 123</td>
<td>Broadway</td>
<td>NSW</td>
<td>2007</td>
</tr>
<tr>
<td>DSA 189</td>
<td>School of Design</td>
<td>The University of Technology Sydney</td>
<td>Faculty of DAB, PO Box 123</td>
<td>Broadway</td>
<td>NSW</td>
<td>2007</td>
</tr>
<tr>
<td>DSA 190</td>
<td>Faculty of Design, Architecture and Building</td>
<td>The University of Technology Sydney</td>
<td>Faculty of DAB, PO Box 123</td>
<td>Broadway</td>
<td>NSW</td>
<td>2007</td>
</tr>
<tr>
<td>DSA 191</td>
<td>School of Architecture</td>
<td>The University of Technology Sydney</td>
<td>Faculty of DAB, PO Box 123</td>
<td>Broadway</td>
<td>NSW</td>
<td>2007</td>
</tr>
<tr>
<td>DSA 192</td>
<td>School of Design</td>
<td>The University of Technology Sydney</td>
<td>Faculty of DAB, PO Box 123</td>
<td>Broadway</td>
<td>NSW</td>
<td>2007</td>
</tr>
<tr>
<td>DSA 193</td>
<td>School of the Built Environment</td>
<td>The University of Technology Sydney</td>
<td>Faculty of DAB, PO Box 123</td>
<td>Broadway</td>
<td>NSW</td>
<td>2007</td>
</tr>
<tr>
<td>DSA 194</td>
<td>School of Design</td>
<td>The University of Technology Sydney</td>
<td>Faculty of DAB, PO Box 123</td>
<td>Broadway</td>
<td>NSW</td>
<td>2007</td>
</tr>
<tr>
<td>DSA 195</td>
<td>Faculty of Architecture, Landscape and Visual Arts</td>
<td>The University of Western Australia</td>
<td>35 Stirling Highway</td>
<td>Crawley</td>
<td>WA</td>
<td>6009</td>
</tr>
<tr>
<td>DSA 196</td>
<td>Faculty of Architecture, Landscape and Visual Arts</td>
<td>The University of Western Australia</td>
<td>35 Stirling Highway</td>
<td>Crawley</td>
<td>WA</td>
<td>6009</td>
</tr>
<tr>
<td>DSA 197</td>
<td>Faculty of Architecture, Landscape and Visual Arts</td>
<td>The University of Western Australia</td>
<td>35 Stirling Highway</td>
<td>Crawley</td>
<td>WA</td>
<td>6009</td>
</tr>
<tr>
<td>DSA 198</td>
<td>Faculty of Architecture, Landscape and Visual Arts</td>
<td>The University of Western Australia</td>
<td>35 Stirling Highway</td>
<td>Crawley</td>
<td>WA</td>
<td>6009</td>
</tr>
<tr>
<td>DSA 199</td>
<td>Faculty of Architecture, Landscape and Visual Arts</td>
<td>The University of Western Australia</td>
<td>35 Stirling Highway</td>
<td>Crawley</td>
<td>WA</td>
<td>6009</td>
</tr>
<tr>
<td>DSA 200</td>
<td>Faculty of Architecture, Landscape and Visual Arts</td>
<td>The University of Western Australia</td>
<td>35 Stirling Highway</td>
<td>Crawley</td>
<td>WA</td>
<td>6009</td>
</tr>
</tbody>
</table>
Dear NAME,

You are invited to participate in the above research project, which is being conducted by Dr Deirdre Barron (supervisor) and Ms Dianne Summons (PhD student) in the Faculty of Design at Swinburne University of Technology. You have been contacted because you have been identified as a leader in design research with in your Faculty/School. This identification has been drawn from publicly accessible information from your University’s website. This project will form part of Ms Summons’ PhD thesis, and has been approved by the Human Research Ethics Committee.

This project will look at the recent history of regulation of university research in Australia with a focus on its application as a tool for delivering government funding outcomes. It will look at the proposed Research Quality Framework (RQF) and compare it with current quality frameworks where government funding is the outcome of compliance. One of the key attributes of the RQF is the need for research in each grouping to be measured. Design can produce research by either written, artifact or a combination of both. Therefore, this project investigates University Design faculty’s view regarding the ability of design to be measured and their understanding of the potential for impact of a quality framework on the products of design. Lastly, it will seek to understand how current Australian University Quality Frameworks impact on Design Faculty and or Schools policies and curriculum and what plans, if any, are underway to meet the provisions of the RQF.

Should you agree to participate, you will be interviewed by Ms Summons. In that interview you will be asked to respond to 10 questions. You will also be asked general information about Design School level of participation, gender, experience with quality frameworks and design field, for example, industrial or multimedia. The interviewer will document your responses by taking handwritten notes. The interviewer will not enter into a discussion in regard to your responses, but will clarify any elements of the question. The reason the interviewer will not engage in a discussion is to minimise any potential interviewer bias. You would be provided with a copy of the interview record, so that you can verify that the information is correct and/or request deletions. We
estimate that the time commitment required of you would not exceed 45 minutes. As a participant you will not be subjected to any discomfort or hazardous conditions during this study.

The data recording of the resulting data from this study will comply with the Australian Standard on personal privacy protection and complies with the Privacy Principles established under Section 14 of the Privacy Act. Your name and contact details will be kept in a separate, password-protected computer file from any data that you supply. This will only be able to be linked to your responses by the researchers, for example, in order to know where to send your interview record for checking. In the final report, you will be referred to by a pseudonym. We will remove any references to personal information that might allow someone to guess your identity; however, you should note that as the number of people we seek to interview is very small, it is possible that someone may still be able to identify you. The publication of the outcomes of this research will not compromise the identity of individual participants in this study, in any way subject to any legal requirements. Where data from this study is made available to other researchers it will only be in the form of de-identified, aggregated data.

The benefit of your assistance in this research will determine whether Design School Academics think that Design can be measured within a Quality Framework. The outcomes of this research have the potential to assist with the application process for Design School Research funding. Once the thesis arising from this research has been completed, a brief summary of the findings will be available to you on application at the Faculty of Design, Swinburne University of Technology. It is also possible that the results will be published in academic journals and presented at academic conferences. The data will be kept securely in the Faculty of Design for five years from the date of publication, before being destroyed.

If you agree to participate, please indicate that you have read and understood this information by signing the accompanying consent form and returning it in the envelope provided. The researchers will then contact you to arrange a mutually convenient time for you to be interviewed.

Should you require any further information, or have any concerns, please do not hesitate to contact either of the researchers on the numbers given above.

Should you have any concerns about the conduct of the project, you are welcome to contact:
Research Ethics Officer,
Swinburne Research (H68),
Swinburne University of Technology
PO Box 218
Hawthorn VIC 3122
Phone +61 3 9214 5218 or
Email: resthics@swin.edu.au

Regards

Dianne Summons
Dear NAME,

You are invited to participate in the above research project, which is being conducted by Dr Deirdre Barron (supervisor) and Ms Dianne Summons (PhD student) in the Faculty of Design at Swinburne University of Technology. You are being asked to participate in this research as you have been identified as working in a Faculty/School of Design. Your name and contact details have been drawn from information available on your university’s public available web site. This project will form part of Ms Summons’ PhD thesis, and has been approved by the Human Research Ethics Committee.

This project will look at the recent history of regulation of university research in Australia with a focus on its application as a tool for delivering government funding outcomes. It will look at the proposed Research Quality Framework (RQF) and compare it with current quality frameworks where government funding is the outcome of compliance. One of the key attributes of the RQF is the need for research in each grouping to be measured. Design can produce research by either written, artifact or a combination of both. Therefore, this project investigates University Design faculty’s view regarding the ability of design to be measured and their understanding of the potential for impact of a quality framework on the products of design. Lastly, it will seek to understand how current Australian University Quality Frameworks impact on Design Faculty and or Schools policies and curriculum and what plans, if any, are underway to meet the provisions of the RQF.

Should you agree to participate, you will be provided with questionnaire of 10 questions. A 5-point Likert scale will be used to measure your responses to these questions. You will be required to circle the number next to the statement that either meets your view or is closest to it. The scale has as its range “totally disagree” (1) to “totally agree” (5). In cases where more than one answer is appropriate you will be asked to choose the one that you most closely identify with or where a choice is not possible to choose the highest number of the unresolved choices. You will also be asked general information about Design School level of participation, gender, experience with quality frameworks and design field, for example, industrial or multimedia. As a
participant you will not be subjected to any discomfort or hazardous conditions during this study.

The data recording of the resulting data from this study will comply with the Australian Standard on personal privacy protection and complies with the Privacy Principles established under Section 14 of the Privacy Act. Your name and contact details will not be kept on record. Only the University in which you work will be recorded and we will remove any references to personal information that might allow someone to guess your identity. The publication of the outcomes of this research will not compromise the identity of individual participants in this study, in any way subject to any legal requirements. Where data from this study is made available to other researchers it will only be in the form of de-identified, aggregated data.

The benefit of your assistance in this research will determine whether Design School Academics think that Design can be measured within a Quality Framework. The outcomes of this research have the potential to assist with the application process for Design School Research funding. Once the thesis arising from this research has been completed, a brief summary of the findings will be available to you on application at the Faculty of Design, Swinburne University of Technology. It is also possible that the results will be published in academic journals and presented at academic conferences. The data will be kept securely in the Faculty of Design for five years from the date of publication, before being destroyed.

If you agree to participate, please indicate that you have read and understood this information by signing the accompanying consent form and returning it in the envelope provided. The researchers will then contact you to arrange a mutually convenient time for you to be interviewed.

Should you require any further information, or have any concerns, please do not hesitate to contact either of the researchers on the numbers given above.

Should you have any concerns about the conduct of the project, you are welcome to contact:
Executive Officer, Human Research Ethics,
Swinburne University of Technology
PO Box 218
Hawthorn VIC
Australia 3122
Phone +61 3 9214 5225

Regards

Dianne Summons
### Descriptive Statistics and Inter-correlations

#### Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subjects</td>
<td>37</td>
<td>1.00</td>
<td>37.00</td>
<td>19.000</td>
<td>10.82436</td>
</tr>
<tr>
<td>Control</td>
<td>37</td>
<td>.00</td>
<td>1.00</td>
<td>.5946</td>
<td>.49774</td>
</tr>
<tr>
<td>Gender</td>
<td>37</td>
<td>.00</td>
<td>1.00</td>
<td>.4865</td>
<td>.50671</td>
</tr>
<tr>
<td>DSP</td>
<td>37</td>
<td>1.00</td>
<td>8.00</td>
<td>3.2162</td>
<td>1.98795</td>
</tr>
<tr>
<td>Management</td>
<td>37</td>
<td>.00</td>
<td>1.00</td>
<td>.3243</td>
<td>.47458</td>
</tr>
<tr>
<td>Teaching</td>
<td>37</td>
<td>.00</td>
<td>1.00</td>
<td>.6757</td>
<td>.47458</td>
</tr>
<tr>
<td>QFWExp</td>
<td>37</td>
<td>1.00</td>
<td>6.00</td>
<td>3.0000</td>
<td>1.22474</td>
</tr>
<tr>
<td>NoneExp</td>
<td>37</td>
<td>.00</td>
<td>1.00</td>
<td>.1081</td>
<td>.31480</td>
</tr>
<tr>
<td>Novice</td>
<td>37</td>
<td>.00</td>
<td>1.00</td>
<td>.2432</td>
<td>.43496</td>
</tr>
<tr>
<td>Elementary</td>
<td>37</td>
<td>.00</td>
<td>1.00</td>
<td>.3243</td>
<td>.47458</td>
</tr>
<tr>
<td>Intermediate</td>
<td>37</td>
<td>.00</td>
<td>1.00</td>
<td>.2162</td>
<td>.41734</td>
</tr>
<tr>
<td>Advanced</td>
<td>37</td>
<td>.00</td>
<td>1.00</td>
<td>.0811</td>
<td>.27672</td>
</tr>
<tr>
<td>Expert</td>
<td>37</td>
<td>.00</td>
<td>1.00</td>
<td>.0270</td>
<td>.16440</td>
</tr>
<tr>
<td>DesignField</td>
<td>37</td>
<td>1.00</td>
<td>15.00</td>
<td>5.7568</td>
<td>4.01667</td>
</tr>
<tr>
<td>AcedemDesigners</td>
<td>37</td>
<td>.00</td>
<td>1.00</td>
<td>.5946</td>
<td>.49774</td>
</tr>
<tr>
<td>NonAcedemDesigners</td>
<td>37</td>
<td>.00</td>
<td>1.00</td>
<td>.4054</td>
<td>.49774</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>37</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Gender

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td>Male</td>
<td>19</td>
<td>51.4</td>
<td>51.4</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>18</td>
<td>48.6</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>37</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

### DSP

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td>TAResStudent</td>
<td>4</td>
<td>10.8</td>
<td>10.8</td>
</tr>
<tr>
<td></td>
<td>Lecturer</td>
<td>15</td>
<td>40.5</td>
<td>51.4</td>
</tr>
<tr>
<td></td>
<td>SenLecturer</td>
<td>6</td>
<td>16.2</td>
<td>67.6</td>
</tr>
<tr>
<td></td>
<td>ProgCoOrdinator</td>
<td>5</td>
<td>13.5</td>
<td>81.1</td>
</tr>
<tr>
<td></td>
<td>Manager</td>
<td>2</td>
<td>5.4</td>
<td>86.5</td>
</tr>
<tr>
<td></td>
<td>Director</td>
<td>1</td>
<td>2.7</td>
<td>89.2</td>
</tr>
<tr>
<td></td>
<td>DepDean</td>
<td>1</td>
<td>2.7</td>
<td>91.9</td>
</tr>
<tr>
<td></td>
<td>Dean</td>
<td>3</td>
<td>8.1</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>37</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

### QFWExp

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td>None</td>
<td>4</td>
<td>10.8</td>
<td>10.8</td>
</tr>
<tr>
<td></td>
<td>Novice</td>
<td>9</td>
<td>24.3</td>
<td>35.1</td>
</tr>
<tr>
<td></td>
<td>Elementary</td>
<td>12</td>
<td>32.4</td>
<td>67.6</td>
</tr>
<tr>
<td></td>
<td>Intermediate</td>
<td>8</td>
<td>21.6</td>
<td>89.2</td>
</tr>
<tr>
<td></td>
<td>Advanced</td>
<td>3</td>
<td>8.1</td>
<td>97.3</td>
</tr>
<tr>
<td></td>
<td>Expert</td>
<td>1</td>
<td>2.7</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>37</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>
### DesignField

<table>
<thead>
<tr>
<th>Field</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architecture</td>
<td>8</td>
<td>21.6</td>
<td>21.6</td>
<td>21.6</td>
</tr>
<tr>
<td>Communication Design</td>
<td>2</td>
<td>5.4</td>
<td>5.4</td>
<td>27.0</td>
</tr>
<tr>
<td>Digital Media</td>
<td>2</td>
<td>5.4</td>
<td>5.4</td>
<td>32.4</td>
</tr>
<tr>
<td>Fashion Design</td>
<td>2</td>
<td>5.4</td>
<td>5.4</td>
<td>37.8</td>
</tr>
<tr>
<td>Graphic Design</td>
<td>6</td>
<td>16.2</td>
<td>16.2</td>
<td>54.1</td>
</tr>
<tr>
<td>Industrial Design</td>
<td>4</td>
<td>10.8</td>
<td>10.8</td>
<td>64.9</td>
</tr>
<tr>
<td>Interior Architecture</td>
<td>2</td>
<td>5.4</td>
<td>5.4</td>
<td>70.3</td>
</tr>
<tr>
<td>Landscape Architecture</td>
<td>3</td>
<td>8.1</td>
<td>8.1</td>
<td>78.4</td>
</tr>
<tr>
<td>Multimedia Design</td>
<td>1</td>
<td>2.7</td>
<td>2.7</td>
<td>81.1</td>
</tr>
<tr>
<td>Product Design Engineering</td>
<td>1</td>
<td>2.7</td>
<td>2.7</td>
<td>83.8</td>
</tr>
<tr>
<td>Urban Planning</td>
<td>2</td>
<td>5.4</td>
<td>5.4</td>
<td>89.2</td>
</tr>
<tr>
<td>Ceramics</td>
<td>1</td>
<td>2.7</td>
<td>2.7</td>
<td>91.9</td>
</tr>
<tr>
<td>Design</td>
<td>1</td>
<td>2.7</td>
<td>2.7</td>
<td>94.6</td>
</tr>
<tr>
<td>DesHistTher</td>
<td>1</td>
<td>2.7</td>
<td>2.7</td>
<td>97.3</td>
</tr>
<tr>
<td>ArtHistorian</td>
<td>1</td>
<td>2.7</td>
<td>2.7</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>37</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

### AcademDesigners

<table>
<thead>
<tr>
<th>Field</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All other Designers</td>
<td>15</td>
<td>40.5</td>
<td>40.5</td>
<td>40.5</td>
</tr>
<tr>
<td>AcademDesigners</td>
<td>22</td>
<td>59.5</td>
<td>59.5</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>37</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>
Box plots
## Appendix I

### Correlations

<table>
<thead>
<tr>
<th>Q1. The outcomes of Design are measurable</th>
<th>Q2. Quality Frameworks ensure the measurement of Design by informed Practitioners</th>
<th>Q3. Quality Frameworks have the ability to measure Design accurately</th>
<th>Q4. Design elements can be measured within a Quality Framework</th>
<th>Q5. Design is poorer because of the need to comply with Quality Frameworks</th>
<th>Q6. Quality Frameworks limit innovation</th>
<th>Q7. Designers have to meet the conventions of their design discipline to produce a finished product</th>
<th>Q8. Quality Frameworks ensure that levels of excellence are met</th>
<th>Q9. Compliance with a set statement of quality parameters will improve the outcomes of Design</th>
<th>Q10. Quality Frameworks increase the excellence of design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1. The outcomes of Design are measurable</td>
<td>Pearson Correlation</td>
<td>1</td>
<td>.169</td>
<td>.289</td>
<td>.311</td>
<td>-.161</td>
<td>-.121</td>
<td>.261</td>
<td>.263</td>
</tr>
<tr>
<td>Sig (2-tailed)</td>
<td>.037</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>Q2. Quality Frameworks ensure the measurement of Design by informed Practitioners</td>
<td>Pearson Correlation</td>
<td>.169</td>
<td>1</td>
<td>.489**</td>
<td>.481**</td>
<td>-.279</td>
<td>-.097</td>
<td>-.281</td>
<td>.603**</td>
</tr>
<tr>
<td>Sig (2-tailed)</td>
<td>.317</td>
<td>.002</td>
<td>.003</td>
<td>.094</td>
<td>.567</td>
<td>.093</td>
<td>.000</td>
<td>.000</td>
<td>.003</td>
</tr>
<tr>
<td>Q3. Quality Frameworks have the ability to measure Design accurately</td>
<td>Pearson Correlation</td>
<td>.289</td>
<td>.489**</td>
<td>1</td>
<td>.659**</td>
<td>-.344*</td>
<td>-.311</td>
<td>-.144</td>
<td>.629**</td>
</tr>
<tr>
<td>Sig (2-tailed)</td>
<td>.083</td>
<td>.002</td>
<td>.000</td>
<td>.037</td>
<td>.061</td>
<td>.396</td>
<td>.000</td>
<td>.036</td>
<td>.000</td>
</tr>
<tr>
<td>Q4. Design elements can be measured within a Quality Framework</td>
<td>Pearson Correlation</td>
<td>.311</td>
<td>.481**</td>
<td>.659**</td>
<td>1</td>
<td>-.083</td>
<td>-.087</td>
<td>-.067</td>
<td>.482**</td>
</tr>
<tr>
<td>Sig (2-tailed)</td>
<td>.061</td>
<td>.003</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.021</td>
</tr>
<tr>
<td>Q5. Design is poorer because of the need to comply with Quality Frameworks</td>
<td>Pearson Correlation</td>
<td>-.161</td>
<td>-.279</td>
<td>-.344*</td>
<td>-.083</td>
<td>1</td>
<td>.575**</td>
<td>.412*</td>
<td>-.092</td>
</tr>
<tr>
<td>Sig (2-tailed)</td>
<td>.343</td>
<td>.094</td>
<td>.037</td>
<td>.627</td>
<td>.000</td>
<td>.011</td>
<td>.689</td>
<td>.589</td>
<td>.715</td>
</tr>
<tr>
<td>Q6. Quality Frameworks limit innovation</td>
<td>Pearson Correlation</td>
<td>-.121</td>
<td>-.097</td>
<td>-.311</td>
<td>-.087</td>
<td>.575**</td>
<td>1</td>
<td>.085</td>
<td>-.140</td>
</tr>
<tr>
<td>Sig (2-tailed)</td>
<td>.475</td>
<td>.067</td>
<td>.061</td>
<td>.060</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>Q7. Designers have to meet the conventions of their design discipline to produce a finished product</td>
<td>Pearson Correlation</td>
<td>.261</td>
<td>-.281</td>
<td>-.144</td>
<td>-.067</td>
<td>.412*</td>
<td>.085</td>
<td>1</td>
<td>.100</td>
</tr>
<tr>
<td>Sig (2-tailed)</td>
<td>.119</td>
<td>.093</td>
<td>.396</td>
<td>.692</td>
<td>.011</td>
<td>.617</td>
<td>.556</td>
<td>.528</td>
<td>.707</td>
</tr>
<tr>
<td>Q8. Quality Frameworks ensure that levels of excellence are met</td>
<td>Pearson Correlation</td>
<td>.263</td>
<td>.603**</td>
<td>.629**</td>
<td>.482**</td>
<td>-.068</td>
<td>-.140</td>
<td>.100</td>
<td>1</td>
</tr>
<tr>
<td>Sig (2-tailed)</td>
<td>.116</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>Q9. Compliance with a set statement of quality parameters will improve the outcomes of Design</td>
<td>Pearson Correlation</td>
<td>-.091</td>
<td>.479**</td>
<td>.346*</td>
<td>.377*</td>
<td>-.092</td>
<td>.000</td>
<td>-.107</td>
<td>.581**</td>
</tr>
<tr>
<td>Sig (2-tailed)</td>
<td>.594</td>
<td>.003</td>
<td>.036</td>
<td>.021</td>
<td>.589</td>
<td>1.000</td>
<td>.528</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>Q10. Quality Frameworks increase the excellence of design</td>
<td>Pearson Correlation</td>
<td>.291</td>
<td>.583**</td>
<td>.739**</td>
<td>.587**</td>
<td>-.057</td>
<td>-.056</td>
<td>.064</td>
<td>.806**</td>
</tr>
<tr>
<td>Sig (2-tailed)</td>
<td>.081</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).
\( \text{Listwise N}=37 \)
### Design School participation

<table>
<thead>
<tr>
<th>Role</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Researcher Tutor</td>
<td></td>
</tr>
<tr>
<td>Lecturer</td>
<td></td>
</tr>
<tr>
<td>Senior Lecturer</td>
<td></td>
</tr>
<tr>
<td>Program Coordinator</td>
<td></td>
</tr>
<tr>
<td>Manager</td>
<td></td>
</tr>
<tr>
<td>Director</td>
<td></td>
</tr>
<tr>
<td>Deputy Dean</td>
<td></td>
</tr>
<tr>
<td>Dean</td>
<td></td>
</tr>
<tr>
<td>Pro Vice Chancellor</td>
<td></td>
</tr>
<tr>
<td>Vice Chancellor</td>
<td></td>
</tr>
</tbody>
</table>

### Design Field

<table>
<thead>
<tr>
<th>Field</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Architecture</td>
<td></td>
</tr>
<tr>
<td>Communication Design</td>
<td></td>
</tr>
<tr>
<td>Digital Media</td>
<td></td>
</tr>
<tr>
<td>Fashion Design</td>
<td></td>
</tr>
<tr>
<td>Graphic Design</td>
<td></td>
</tr>
<tr>
<td>Industrial Design</td>
<td></td>
</tr>
<tr>
<td>Interior Architecture</td>
<td></td>
</tr>
<tr>
<td>Landscape Architecture</td>
<td></td>
</tr>
<tr>
<td>Multimedia Design</td>
<td></td>
</tr>
<tr>
<td>Product Design Engineering</td>
<td></td>
</tr>
<tr>
<td>Urban Planning</td>
<td></td>
</tr>
</tbody>
</table>

### Experience with Quality Frameworks

<table>
<thead>
<tr>
<th>Level</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Novice</td>
<td></td>
</tr>
<tr>
<td>Elementary</td>
<td></td>
</tr>
<tr>
<td>Intermediate</td>
<td></td>
</tr>
<tr>
<td>Advanced</td>
<td></td>
</tr>
<tr>
<td>Expert</td>
<td></td>
</tr>
</tbody>
</table>

### Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td></td>
</tr>
</tbody>
</table>
## 2008 Students enrolled in Australian Universities

<table>
<thead>
<tr>
<th>University</th>
<th>World Ranking</th>
<th>Total students</th>
<th>Int students</th>
<th>Av Int student fees US$</th>
<th>Av Dom student fees US$</th>
<th>Int Students as a % of total students</th>
<th>No. Int students</th>
</tr>
</thead>
<tbody>
<tr>
<td>RMIT</td>
<td>206</td>
<td>41,779</td>
<td>18,099</td>
<td>*20320</td>
<td>*15175</td>
<td>43.3%</td>
<td>1</td>
</tr>
<tr>
<td>Curtin UT</td>
<td>232</td>
<td>41,810</td>
<td>17,445</td>
<td>22,100</td>
<td>n/av</td>
<td>41.7%</td>
<td>3</td>
</tr>
<tr>
<td>Swinburne UT</td>
<td>401-500</td>
<td>17,866</td>
<td>6,852</td>
<td>17,250</td>
<td>13,250</td>
<td>38.4%</td>
<td>12</td>
</tr>
<tr>
<td>Macquarie U</td>
<td>182</td>
<td>32,273</td>
<td>11,195</td>
<td>17,813</td>
<td>14,220</td>
<td>34.7%</td>
<td>6</td>
</tr>
<tr>
<td>U South Australia</td>
<td>303</td>
<td>34,647</td>
<td>11,596</td>
<td>15,444</td>
<td>11,000</td>
<td>33.5%</td>
<td>5</td>
</tr>
<tr>
<td>Monash U</td>
<td>47</td>
<td>55,765</td>
<td>17,813</td>
<td>20,239</td>
<td>15,565</td>
<td>31.9%</td>
<td>2</td>
</tr>
<tr>
<td>U of Adelaide</td>
<td>106</td>
<td>19,196</td>
<td>5,077</td>
<td>16,891</td>
<td>4,957</td>
<td>26.4%</td>
<td>16</td>
</tr>
<tr>
<td>U of Sydney</td>
<td>37</td>
<td>50,460</td>
<td>13,245</td>
<td>21,397</td>
<td>16,708</td>
<td>26.2%</td>
<td>4</td>
</tr>
<tr>
<td>U of Melbourne</td>
<td>38</td>
<td>28,843</td>
<td>7,289</td>
<td>24,729</td>
<td>20,033</td>
<td>25.3%</td>
<td>10</td>
</tr>
<tr>
<td>UT Sydney</td>
<td>234</td>
<td>32,258</td>
<td>8,152</td>
<td>18,645</td>
<td>15,664</td>
<td>25.3%</td>
<td>8</td>
</tr>
<tr>
<td>Griffith U</td>
<td>325</td>
<td>35,096</td>
<td>7,984</td>
<td>16,814</td>
<td>14,510</td>
<td>22.7%</td>
<td>9</td>
</tr>
<tr>
<td>UNSW</td>
<td>45</td>
<td>44,799</td>
<td>9,993</td>
<td>19,675</td>
<td>17,846</td>
<td>22.3%</td>
<td>7</td>
</tr>
<tr>
<td>ANU</td>
<td>16</td>
<td>15,869</td>
<td>3,464</td>
<td>18,877</td>
<td>9,450</td>
<td>21.8%</td>
<td>20</td>
</tr>
<tr>
<td>U of Tasmania</td>
<td>291</td>
<td>20,284</td>
<td>4,298</td>
<td>15,918</td>
<td>9,598</td>
<td>21.2%</td>
<td>18</td>
</tr>
<tr>
<td>Latrobe U</td>
<td>242</td>
<td>29,822</td>
<td>6,310</td>
<td>14,639</td>
<td>10,730</td>
<td>21.2%</td>
<td>14</td>
</tr>
<tr>
<td>U of Newcastle</td>
<td>286</td>
<td>28,515</td>
<td>5,908</td>
<td>16,227</td>
<td>11,935</td>
<td>20.7%</td>
<td>15</td>
</tr>
<tr>
<td>UWA</td>
<td>83</td>
<td>18,866</td>
<td>3,825</td>
<td>21,137</td>
<td>11,685</td>
<td>20.3%</td>
<td>19</td>
</tr>
<tr>
<td>Deakin U</td>
<td>396</td>
<td>34,560</td>
<td>6,718</td>
<td>15,918</td>
<td>6,086</td>
<td>19.4%</td>
<td>13</td>
</tr>
<tr>
<td>UQ</td>
<td>43</td>
<td>37,950</td>
<td>6,984</td>
<td>*16692</td>
<td>*5629</td>
<td>18.4%</td>
<td>11</td>
</tr>
<tr>
<td>JCU</td>
<td>401-500</td>
<td>14,820</td>
<td>2,669</td>
<td>n/av</td>
<td>n/av</td>
<td>18.0%</td>
<td>21</td>
</tr>
<tr>
<td>Flinders U</td>
<td>273</td>
<td>11,870</td>
<td>1,613</td>
<td>*8559</td>
<td>*5350</td>
<td>13.6%</td>
<td>24</td>
</tr>
<tr>
<td>QUT</td>
<td>212</td>
<td>37,889</td>
<td>5,041</td>
<td>14,994</td>
<td>11,466</td>
<td>13.3%</td>
<td>17</td>
</tr>
<tr>
<td>Murdock U</td>
<td>401-500</td>
<td>13,443</td>
<td>1,708</td>
<td>n/av</td>
<td>n/av</td>
<td>12.7%</td>
<td>23</td>
</tr>
<tr>
<td>U of Wollongong</td>
<td>207</td>
<td>18,805</td>
<td>1,859</td>
<td>16,819</td>
<td>9,500</td>
<td>9.9%</td>
<td>22</td>
</tr>
</tbody>
</table>

Ranking by subject will differ for example RMIT is ranked at 206 overall however is ranked at 94 for Engineering and IT while University of Sydney is ranked lower than their overall rank of 37 at 41 for Engineering and IT Engineering and IT

* undergraduate only
Dear Deirdre and Dianne

SUHREC Project 0708/092 Measuring Design: A methodology for determining and evaluating the aspects that establish the principles of design excellence across differing pedagogies and within a Research Quality Framework
Dr D Barron Design Ms Dianne Simmons
Approved Duration To 30/09/2008

I write to confirm standard on-going ethics clearance in line with conditions here outlined.

- All human research activity undertaken under Swinburne auspices must conform to Swinburne and external regulatory standards, including the 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 and 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 me if you have any queries about on-going ethics clearance. The SUHREC project number should be quoted in communication.

Best wishes for the continuing project.

Yours sincerely

Keith Wilkins
Secretary, SHESC4

*******************************************

Keith Wilkins
Research Ethics Officer
Swinburne Research (H68)
Swinburne University of Technology
P O Box 218
HAWTHORN VIC 3122
Tel: 9214 5218
Ethical Statement

Declaration

I certify that the treatment of human subjects as required by the Research Ethics Committee National Institute for Design Research (SUT) for the thesis entitled “Design Quality: Evaluating Quality as a Tool and the Potential Impact upon Design Outcomes of Quality Frameworks,” submitted for the Doctor of Philosophy were properly met. Furthermore, I acknowledge that, where required, annual/final reports have been submitted to the review board.

Dianne Summons

Date