DOCTORAL THESIS

I see what you mean: a three method symbolic interactionist study of design and business.

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I SEE WHAT YOU MEAN! A THREE METHOD SYMBOLIC INTERACTIONIST STUDY OF DESIGN AND BUSINESS

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Abstract

In 2007, the *Journal of Business Strategy* published an article by Professor Roger Martin that asked the question, *Design and Business: why can't we be friends?* More than thirteen years on and Martin's question is still pertinent. Despite substantial evidence that *Design* adds value to the economy, *Design* and business are still not friends.

Studies in the UK and USA have examined publicly listed businesses that focus on *Design* and, for over ten years, compared their financial growth with industry counterparts. The results show that *Design*-focused organisations outperform others by more than 200%.

Nevertheless, many business managers fail to recognise *Design* as a valuable contribution to business. This thesis aims to shed light on the ongoing breakdown in communication between *Design* and business professionals at the very time there is growing support for *Design* as a 21st century competitive advantage.

Communication issues arise because the term *Design* is both a noun and a verb and occasionally an adjective. It has no publicly accepted definition or theoretical perspective. *Design* is not academically endorsed or recognised as a profession. In general, the declaration "I am a designer" does not garner the same prestige or recognition as "I am an engineer" or "I am an architect".

The theory of *Symbolic Interactionism* explains how meaning emerges from human communication. It is an established social theory that was particularly prominent in the first half of the 20th century yet is still relevant for the 21st century.

The theory has three foundational premises: 1. Humans respond to something based on the meaning it has for them. 2. Our understanding of something (for example, *Design*) is related to the interactions we have with other people (i.e., our social communications). 3. We may modify our understanding or change our minds about something based on varying social situations. In other words, the meaning we give to *Design* emerges from our social interactions.

This research used *Symbolic Interactionism* as a theoretical guide for examining the different meanings of *Design* found in business.

Three studies formed a mixed-method and convergent parallel *Design* underpinned by *Symbolic Interactionism*. The research question was: How do professionals in *Design* and professionals in business communicate the meaning of *Design*?

The first study involved in-depth interviews with professionals working in business, but not necessarily in *Design*. The second study examined how authors write about *Design* in three contrasting journal publications. The third study assessed how general business relates to *Design* when they write job adverts.

The results show that professionals in both *Design* and business had a range of meanings for *Design.* Five themes emerged: *Design Confusion, Design Frustration, Design Ingenuity, Design Manifestation* and *Design Translation.*

This research is significant because it sheds light on the meaning of *Design* for a diverse range of professionals who potentially collaborate on a global stage. The results of this study will be of great benefit to:

- *Design* practitioners and business professionals and multi-discipline project teams. The results offer a positive way for professionals to manage breakdowns in communication.
- The *Design* disciplines. A shared understanding of *Design* is essential if *Design* is to be positioned as a discipline in its own right and consequently a more prestigious contribution to business.
- Policymakers and executive officers. Public understanding of *Design* is essential for implementing innovative *Design* solutions for the economy.
- Educators. Cross-disciplinary shared understanding of *Design* could close the gap between future *Design* and business leaders.
- Enabled amateurs or citizen designers. Professionals and the public would benefit from a shared understanding of *Design.*

Finally, this study proposes that *Symbolic Interactionism* could be a valuable contribution to a theoretical foundation for *Design*. It seems *Design* and business could be ‘friends’.

Keywords

Design, Design Assumptions, Design Attitude, Design Communication, Design Gap, Design Thinking, Design Meaning, Human-centred Design, Shared Understanding, Symbolic Interactionism.

Statement of Original Authorship

This thesis is submitted to Bond University in fulfilment of the requirements of the degree of Doctor of Philosophy. This thesis represents my own original work towards this research degree and contains no material that has previously been submitted for a degree or diploma at this University or any other institution, except where due acknowledgement is made.

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Signature: _____

Research Outputs and Publications

Peer-reviewed publication

Jervis, J., & Brand, J. (2014). Designing competitive edge through job ads: A content analysis of seek.com.au. In G. Muratovski (Ed.), *Design for Business* (Vol 2., pp.140-159). Intellect.

Peer-reviewed Conference Presentation

Jervis, J., & Brand, J. (2015, May 12-13). *Designing competitive edge through job ads: A content analysis of seek.com.au.* [Paper presentation]. Ideas on Design, Design for Business Research Conference, Melbourne, Australia.

Jervis, J., & Brand, J. (2013, May 23-25). *Unlocking design in business: Symbolic interactionism is the key* [Paper presentation]. agIdeas 2013 Research Conference: Design for Business, Melbourne, Australia.

Jervis, J. (2012, August 8-9). *Renaissance 3.0: Speaking design* [Paper presentation]. Proceedings from The 18th DMI: Academic Design Management Conference, 2012.

Conference Presentation

Jervis, J., & Ting, S. (2012, September 25-26). *Creative synergies: Business and technology and the missing dialogue of design thinking* [Conference presentation abstract]. Creative Communities 3: Risks and Possibilities, Griffith University, Gold Coast City, Australia.

Ethics Declaration

The research associated with this thesis received ethics approval from the *Bond University Human Research Ethics Committee*. Ethics application number: 0000015315.

Ethics approval through the *Bond University Human Research Ethics Committee, Bond University Office of Research Services*, BUHREC Number 0000015315, was granted to the researcher to conduct semi-structured in-depth interviews. Participation in the study was voluntary. The study did not require sensitive personal information. All participants were de-identified and could withdraw at any time before or after the interview. Only the researcher and primary supervisor have access to the names of the original participants. Interview transcripts are stored in a secured location at Bond University for five years under the guidelines set out by the *Bond University Human Research Ethics Committee*.

Study Two and Study Three were content analyses of publicly available texts. They did not infringe on ethical guidelines and therefore, did not require ethics approval.

Copyright Declaration

No published manuscripts were included for publication within this thesis.

Acknowledgements

This thesis has been an eight-year, part-time journey; indeed, a substantial amount of time for any project. However, in the words of John Lennon, life was happening while I made other plans. Nevertheless, completing this thesis has been one of the most rewarding and humbling experiences of my life and career.

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Technically, a PhD is the work of a single researcher. Well, in my case, this PhD would not exist without the wholehearted and loving support of my family. They have well and truly lived with this research and the ups and downs that go with it. They made as many sacrifices as I did, and now, in the end, I feel they are probably equally exhausted.

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To my special friends, thank you accepting my self-imposed seclusion for so many years. Finally, I would like to acknowledge Bond University. I am very grateful for its vision and support of this thesis. Thank you.

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List of Abbreviations

Academy Management Journal	AMJ
All-Party Parliamentary Design and Innovation Group	APDIG
Australian Design Alliance	ADA
Bond University Human Research Ethics Committee	BUHREC
British Department of Trade and Industry	British DTI
Design Studies	DS
Harvard Business Review	HBR
New York University Libraries	NYU Libraries
New Zealand Department of the Prime Minister and Cabinet	NZ DPMC
Symbolic Interactionism	SI
The Australian Centre for Social Innovation	TASCI
United Nations Conference on Trade and Development	UNCTAD

Chapter 1: **Introduction**

Generally, ‘design’ is spelt with a lower case ‘d’. Siodmok (2015) claims that using a ‘big D’ for *Design*, represents award winning examples of excellence. However, as the word ‘*Design*’ is used prolifically throughout this thesis, its meaning could be weakened through overuse and subsequently overlooked; therefore, all uses of the term *Design* are emphasised with a capital ‘D’ and set in italics.

Section 1.1 outlines this study's context, and 1.2, *Mind the Assumption Gap*, provides details of the communication gap between *Design* and business professionals. Section 1.3 introduces the theory of *Symbolic Interactionism* as a foundation for this research; 1.4 describes the purpose the thesis and 1.5 the project’s significance. Finally, Section 1.6 provides an outline and a short description of the thesis chapters.

1.1 Context

In 2007, Professor Roger Martin asked, *Design and Business: why can’t we be friends?* More than thirteen years after publication in the *Journal of Business Strategy* Martin’s question is still pertinent. Despite growing evidence that *Design* adds value to the economy, ‘*Design*’ and ‘business’ are still not ‘friends’ (Martin, 2007).

Martin’s title and article neatly summarise the purpose of this thesis, which was to shed light on the communication breakdowns known to occur between professionals in *Design* and professionals in business. Research shows that communication breakdowns in an industry can negatively impact their competitive advantage in the economy (Jervis & Brand, 2014).

In 2018, *McKinsey & Company* released a five year study of publicly listed companies in the top 25% that focused on *Design*. The study used their globally aligned *McKinsey Design Index* (MDI) to measure financial performance. The results show *Design* focused companies grew two to one more than their industry counterparts over the five years (Sheppard, Sarrazin, Kouyoumjian & Dore, 2018).

Despite these positive findings, plus other studies demonstrating similar results, many business managers do not include *Design* as part of economic growth strategies (Heskett, 2008; Rae, 2015). However, Heskett (2008) points out that while economic professionals may not acknowledge *Design*, neither do *Design* professionals study economics.

In the English language, the term *Design* is a noun, verb and adjective and even though it appeared in text as far back as the 14th century, it has no publicly acknowledged definition or accepted theoretical foundation (Julier, 2008; Ulrich, 2011b). Furthermore, the *Design* disciplines themselves do not agree on a definition of *Design* (Bryant & Wrigley, 2014; Smith, 2005; Wrigley& Bucolo, 2012). Thus, there is limited academic support for professional *Design* and the declaration that "I am a designer" does not achieve the same level of public recognition as "I am an engineer" or "I am an architect" (Smith, 2005). As a result, many business professionals do not share the same understanding of *Design* (Bryant & Wrigley, 2014; Wrigley & Bucolo, 2012).

Conklin (2005) argues that businesses do not question their understanding of *Design* because "each [person] believes that his or her understandings [of *Design*] are complete and shared by all" (p.4). In other words, we assume other people think about *Design* in the same way that we do.

1.2 Mind the Assumption Gap

Existing and extensive research clearly shows that professionals with differing understandings of *Design* have communication problems in business (Bryant & Wrigley, 2014; Dhebar, 2001; Moore, 2002; Wrigley & Bucolo, 2012). Nevertheless, it seems both *Design* and business have been slow to champion a solution.

A common perception of *Design* is that professional designers are mainly "decorators, artisans or stylists" (Muratovski, 2016, p.13). Furthermore, in 2007 Nussbaum observed that many CEOs and managers disliked the concept of *Design* because they found it hard to define and were ignorant of its potential. According to Nussbaum (2007) and Heskett (2008), blame for the lack of *Design's* acceptance in business must also be the designers when they cannot argue for their *Design's* economic benefits.

Wrigley and Bucolo (2012) maintain that this *Design*-business gap is so vast that it requires a new type of professional role. They recommend professional people who can act as "translators", thus bridging the gap between *Design* and business. They name these professionals "transitional developers" (p.6).

Bryant and Wrigley (2014) witnessed the communication gap between *Design* and engineering first-hand during a case study on BMW. In this instance, they could see "an inherent need for a transitional engineer" to bridge the gap between *Design* and engineering, a role they named "designeer" (p. 77).

To date, despite multiple studies showing that positive results can emerge from a *Design* and business relationship, there is no evidence that professionals from either side acknowledge their combined potential for social and economic benefits (Design Council, 2012; Rae, 2015; Sheppard et al., 2018).

Dong (2015) conducted a critical review of the literature surrounding *Design-Led* innovation in business. Dong found that *Design-Led* innovation is more a "perspective" than an evidence-based practice (p.148). Dong's research is an essential indicator of the lack of evidence surrounding the *Design* and business communication gap.

Moore (2002), in his best-selling book *Crossing the Chasm* (2002), sought to bridge a marketing gap between early adopters and "mainstream markets" (p.5). Although Moore's book is not about *Design* per se, it is about the assumptions people make and a gap that Moore identifies as a 'chasm'.

Moore (2002) argues that the first step is to identify the problem. In other words, identifying the communication gap between *Design* professionals and business professionals could help build a bridge for closing this gap.

While Moore discusses a single chasm between two groups, Dhebar (2001) contends businesses must really "identify, understand and traverse six chasms" (p.95). According to Dhebar, the first of the six chasms is the most challenging "The Chasm within the Mind" (Dhebar, 2001, p.97). In this case, people must first have sufficient understanding and suitable vocabulary to describe an unfamiliar paradigm.

The following section introduces *Symbolic Interactionism* as a theoretical perspective that provides insights into how people have various meanings for the same thing: the word *Design*.

1.3 Symbolic Interactionism

Symbolic Interactionism is an established sociological theory that supports both the reality of society while linking it with the meaning people give to things (Burke, 2003). It is a bottom-up approach that can explain how people arrive at their understanding of *Design* (Carter & Fuller, 2016).

The theory's first tenant is that people will react to something based on the meaning it has for them. Secondly, we absorb meanings based on interactions with others in different social settings. Our understanding can come from interactions at home, the workplace or other social groups, but fundamentally, other people influence the meaning we give something. The third premise is considered one of the most important for *Symbolic Interactionism*: it states that we modify our understanding of something, our thoughts about it, based on changing social situations. In other words, we can change our mind about the meaning of *Design* (Blumer, 1969).

The theory originated from early American pragmatist perspectives and was particularly influential for the first half of the 20th century. *Symbolic Interactionism* has maintained a respected academic presence since that time (Carter & Fuller, 2016). However, in 2019, a slight revision of the theory's foundational premises aligned them with 21st century social challenges, thereby making the theory even more appropriate for examining the meaning of *Design* in the workplace (Fine & Tavory, 2019).

1.4 Purposes

Conklin (2005) proposes that a solution to bridge the gap is to promote a shared understanding of *Design* by encouraging people to value others' perspectives. Thus, this research aimed to consider the *Design* perspectives of various professionals in the workplace.

The purpose was to shed light on the ongoing breakdown in communication between *Design* and business professionals at the very time there is growing support for *Design* as a 21st century competitive advantage (Rae, 2015).

The research question driving this thesis was:

1. How do professionals in *Design* and professionals in business communicate the meaning of *Design*?

The hypothesis behind the research question was that breakdowns in communication between *Design* and business professionals stem from different assumptions made about *Design* (Boland & Collopy, 2004; Conklin, 2005),

Three studies, each responding to a sub-question and underpinned by *Symbolic Interactionism*, formed a mixed method and convergent parallel research *Design* (Creswell & Plano Clarke, 2017; Blumer, 1969; Fine & Tavory, 2019).

- Study One asked selected interview participants: What meaning do people give to *Design* in professional settings?
- Study Two examined three different journals to find out: How do professional publications and their authors communicate a view of *Design* through their writing?
- Study Three examined job ads on an online job portal to see: How do businesses use the term *Design* in their online job ads?

The research objective was to analyse how different *Design* and business professionals communicated a value and meaning for *Design* across various settings.

1.5 Significance of the Research

Substantial research has recognised the gap between *Design* and business (Bryant & Wrigley, 2014; Dhebar, 2001; Moore, 2002; Smith, 2005; Wrigley & Bucolo, 2012). This existing research is vital in understanding the *Design* and business communication gap. However, there appear to be limited studies that focus on the vocabulary people use to communicate *Design* attitudes and assumptions of professionals in the workplace (Boland, 2004; Smith, 2005).

Thus, this research is significant because it reduces the existing confusion about the meaning of *Design* between a) *Design* and business professionals, b) between the *Design* disciplines, and c) the wider community.

It sheds light on the meaning of *Design* for a diverse range of professionals in the workplace who potentially collaborate on a global stage.

The results of this study will be of great benefit to:

- *Design and Business:* the results create a communication bridge for *Design* practitioners and business professionals who collaborate in a global economy by forming a foundation for shared understanding between project members.
- *The Design Disciplines:* the results create awareness and enable discussion towards a united *Design* understanding and are an essential step in creating a more prestigious *Design* perspective (Smith, 2005).
- *Policymakers:* policymakers and executive officers responsible for promoting creativity and innovation in the economy would benefit from understanding how they and other people talk about and give meaning to *Design*.
- *Higher Education:* this research furthers cross-disciplinary *Design* communication in Higher Education by showcasing different *Design* perspectives. This knowledge will help educators, responsible for our future leaders' thinking, to bridge the communication gap between *Design* and business.
- *Public***:** enabled amateurs or citizen designers also have an impact on the Design communication gap between professionals. Thus, more straightforward communication about *Design* and what it means to different people would also promote overall understanding for the general public (Smith, 2005)
- *Human-centred Design and Design Thinking:* this research is a significant contribution for shared understanding in multi-discipline project teams who come together and engage in *Human-centred Design* and *Design Thinking* collaborations. The results of this study would enable a pre-project understanding of *Design* between team members.
- *Theory:* this research presents *Symbolic Interactionism* as a foundation for *Design* research. As *Design* has no accepted theoretical position

(Love, 2002; Margolin, 1989; Ralph & Wand, 2009) this study will contribute to the dialogue proposing a theoretical foundation for *Design* (Nelson and Stolterman, 2012).

Section 1.6 provides an outline for each chapter.

1.6 Thesis Outline

The following section provides a diagram of the thesis structure, followed by a brief description of each chapter. In particular, Figure 1 illustrates how the three chapter-specific studies integrate into Chapter 7 and the subsequent contribution and conclusions in Chapter 8.

Figure 1

Diagram of Thesis Structure by Chapter

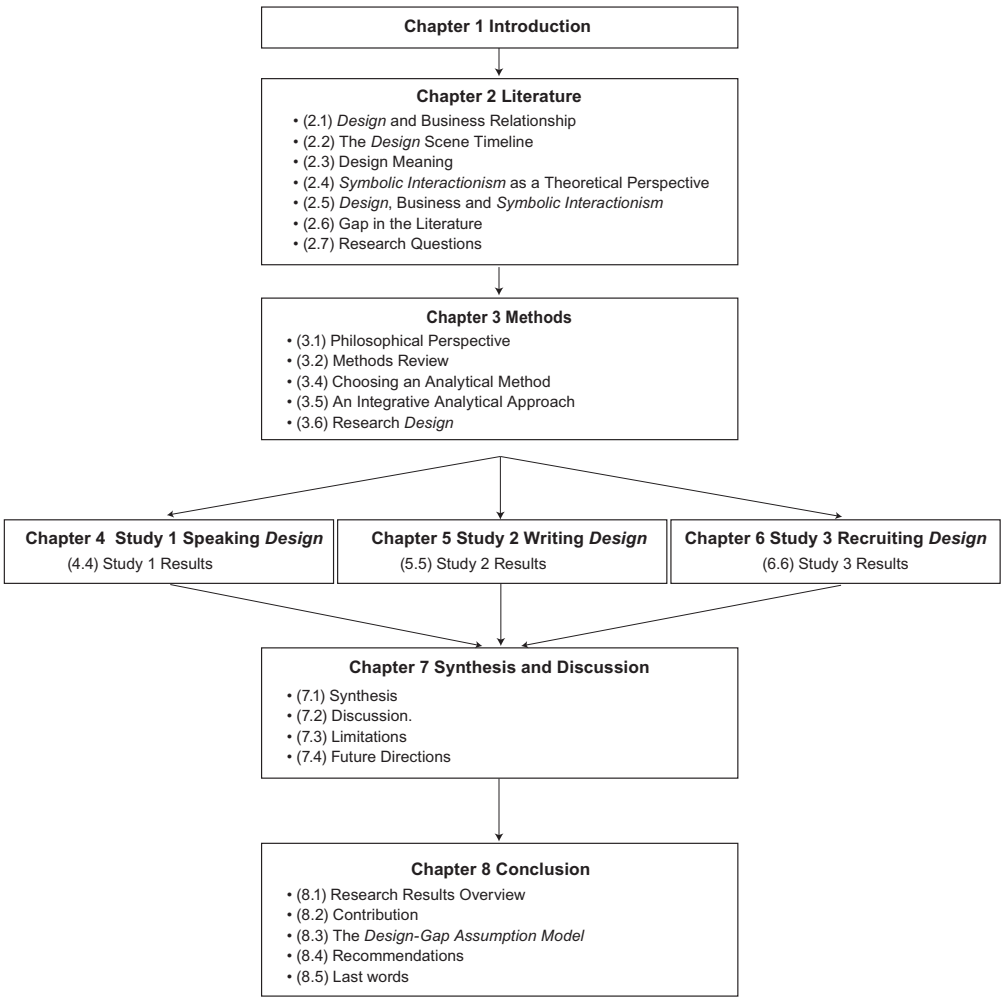


Figure 1 outlines the main structure for each chapter to illustrate how the three chapter-specific studies integrate into Chapter 7 and Chapter 8.

Chapter 1: Section 1.1 outlines this study's context, and 1.2, *Mind the Assumption Gap*, provides more detail of the communication gap between *Design* and business professionals. Section 1.3 introduces the theory of *Symbolic Interactionism* as a foundation for this research; 1.4 describes the purpose and scope of the thesis and 1.5 the project's significance. Finally, Section 1.6 provides an outline and a short description of the thesis chapters.

Chapter 2: examines the literature around the *Design* and business relationship. Section 2.1 examines the benefits of a *Design* and business partnership and then the challenges faced by such a partnership. The remaining chapter is structured around three central themes. The first theme (2.2) covers *The Design Scene Timeline* from the *Renaissance* to the *Fourth Industrial Revolution*. The second theme (2.3) reviews *Design Meaning,* which covers *Design* in the literature, including definitions of *Design* and *Design* education. The third theme (2.4) provides information about the theory of *Symbolic Interactionism*, its origins and suitability for this research. Section 2.5 discusses how *Symbolic Interactionism* applies to the meaning of *Design*. Section 2.6 considers a gap in the literature and 2.7 presents the research questions that will underpin this thesis and three studies.

Chapter 3: describes the methods used to achieve the aims and objectives of this research. Section 3.1 discusses the philosophical views of pragmatism. Section 3.2 reviews *Symbolic Interactionism* and mixed method research. 3.3 examines content analysis and its connection to mixed methods. 3.4 chooses an analytical method and 3.5 discusses the integration of methods. Finally, section 3.6 presents the research *Design* for three studies that aim to answer the research questions described in Chapter 2.

Chapter 4: describes the methodology and results for Study One. Sections 4.1 to 4.3 explain the participant recruitment process for seven face-to-face, semi-structured, in-depth interviews, the instruments used, and the subsequent data coding process. 4.4 presents the results of Study One and 4.5 a summary of the chapter.

Chapter 5: presents the methodology over a longitudinal timeframe and the results for Study Two. Section 5.1 covers the procedure for choosing the publications and the study timeline. Section 5.2 describes the data selection process.

Sections 5.3 and 5.4 specify the sample sizes. Section 5.5 outlines the results of Study Two and 5.6 provides a summary of the chapter.

Chapter 6: explains Study Three, which was also a longitudinal study. Section 6.1 describes a pilot study, 6.2 the timeframe and codebook information, 6.3 the sample frame, 6.4 the data collection process and 6.5 the sample sizes. Section 6.6 presents the results of the analysis and 6.7 a chapter summary.

Chapter 7: provides a synthesis (7.1) and discussion (7.2) of the results for all three studies. It brings together the findings from the chapter-specific studies (Chapter 4, Chapter 5 and Chapter 6) to answer the research questions. There is a discussion of the study limitations in 7.3 and future directions for research in 7.4.

Chapter 8: This chapter first provides an overview of the research (8.1) and then details its contribution (8.2). It presents the five meaning of *Design* themes, the *Design-Gap Assumption Model* (D-GAM) and the *Design-Gap* Assumption *Vocabulary* (D-GAV) (8.3). The thesis concludes with recommendations for future research (8.4) and last words (8.5).

Chapter 2: **Literature Review**

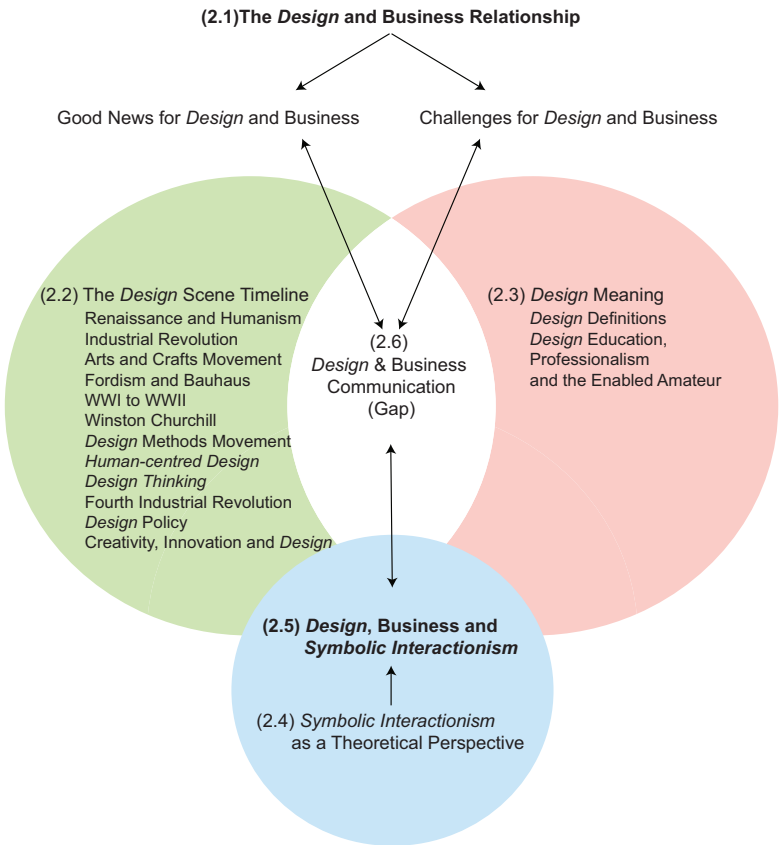
Design is so simple. That's what makes it so complicated.
(Paul Rand).

This chapter is a literature review of topics associated with *Design* and business. Section 2.1 looks at the positive and economic benefits that a partnership between *Design* and business can generate and 2.1.2 how communication issues between the two sides have negatively affected competitive advantage (Jervis & Brand, 2014).

Figure 2 shows the literature topics and their overlapping areas. The diagram's central area represents the communication gap, known to occur in the workplace, between business and *Design* professionals.

Figure 2

Central Themes Literature Review Design and Business Gap



2.1 The Design and Business Relationship

More than thirteen years ago, Professor Roger Martin asked the question, *Design and Business: why can't we be friends?* Despite growing evidence that *Design* adds value to the economy, *Design* and business are still not friends (Rae, 2015; Martin, 2007; Heskett, 2008).

The title of Martin's article neatly summarises the purpose of this thesis, which was to shed light on the communication breakdowns known to occur between professionals in business and professionals in *Design* at the very time there is growing support for *Design* as a 21st-century competitive advantage (Jervis & Brand, 2014).

2.1.1 *Good News for Design and Business*

Good Design is good business.
(Thomas Watson, Jr. CEO IBM).

Thomas Watson Jr. was president, chairman and CEO of IBM from 1956 to 1971. Watson was the driving force behind instigating a *Corporate Design Program* within IBM. He argued that the program was,

> the first of its kind in America, bequeathing to posterity not just IBM-funded architecture, sculpture, photography, film and graphic design masterpieces, but the idea of harmony between business and design (IBM100, n.d., para. 2).

In 2012 IBM, then a $143 billion-dollar company, reviewed its company's *Design* culture. They increased the number of designers they employed and trained all 377,000 employees worldwide to think like designers (Quito, 2016). According to Phil Gilbert, general manager of *Design* for IBM, the purpose was to utilise the designer's mentality, a customer-first approach, instead of a product first mindset, and then overlay customer connection with their business and engineering practices.

> If you don't have all three, you won't have a good outcome reliably, at least not at scale (Gilbert in Quito, 2016, para.9).

The British Design Council was one of the first organisations to initiate research into the economic benefits of a *Design* and business relationship.

A 2005 report, *Design Index: The Impact of Design on Stock Market Performance* (Design Council, 2005), presented the results of a ten-year study of publicly listed companies on the British stock exchange.

The report found that:

> The difference between design-aware businesses and the rest is not just marginal – their share prices have outrun key stock market indices by a full 200 per cent (Design Council, 2005, p.3).

Subsequent research by the Design Council (2012) stated that,

> for every £1 invested in design, businesses can expect over £20+ in increased revenues...over £4+ increase in net operating profit ...[and] £5+ in increased exports (p.2).

Following on from these research initiatives by the Design Council, the Design Management Institute (DMI) who, in partnership with Motiv Strategies and funded by Microsoft, published *What is the Real Value of Design?* (Rae, 2013). Their report was a ten-year study of fourteen publicly listed companies that matched their *Design Value Index* (DVI).

The fourteen companies tracked on the DVI were *Apple*; *Coca-Cola*; *Ford*; *Herman-Miller*; *IBM*; *Intuit*; *Nike*; *Proctor & Gamble*; *SAP*; *Starbucks*; *Starwood*; *Stanley Black & Decker*; *Steelcase*; *Target*; *Walt Disney* and *Whirlpool*.

DMI and Motiv Strategies found that,

> While the S&P grew 75 percent from 2003 to 2013, our Design-Centric Index grew an astonishing 299 percent (Rae, 2013, p.31).

Eight activities common to these '*Design-centric'* companies on the DMI *Design Value Index* were (Rae, 2013, pp.32 - 37):

1. The *Design* was not only aesthetically appealing; it was usable and relevant.
2. People related to the brand as an extension of themselves.
3. *Design* solved a problem for the user.

4. The company provided a satisfying end to end experience for their customers.
5. The companies utilised *Design Thinking* to solve complex issues.
6. Software or technology *Design* provided a pleasant user experience.
7. Market expansion was made possible through understanding customers insights.
8. Good *Design* could reduce manufacturing costs.

Subsequent reports by DMI and *Motiv Strategies* revealed that, for the following three years in a row, those 14 "*Design*-centric" companies consistently achieved a "211% return over the S&P 500" (Rae, 2016, p.5).

Then, in October 2018, *McKinsey & Company* released a rigorously researched report, *The Business Value of Design* (Sheppard et al., 2018).

The McKinsey report tracked 300 publicly listed companies for five years using the *McKinsey Design Index* (MDI). The study measured how much a company committed to *Design* and its related financial performance. The results showed that the top 25% of companies in the MDI grew two to one more than their industry counterparts over the five years.

These reports consistently show that a *Design* focus in business positively contributes to a company's economic position.

However, the literature also indicates there is more to *Design* than making profits. Papanek (1971), in his renowned book *Design for the Real World,* states:

> All men are designers. All that we do, almost all the time, is *Design*, for *Design* is basic to all human activity (Papanek, 1971, p.3).

Thus, *Design* is what makes us human (Friedman, 2000; Papanek, 1971). Friedman (2000) maintains that the "urge to *Design*, to take a situation, imagine a better situation, and act to create that situation" began with *Homo habilis*, our first, pre-human ancestors (p.6). Likewise, human beings can have an emotional connection to *Design* that affects how we think and behave (Wrigley, 2011). It seems that *Design* is fundamental to our human existence and well-being.

In a continuously evolving world, good *Design* can make our lives more comfortable and visually pleasing (Rae, 2013).

With this in mind, the following section looks at the challenges found in a *Design* and business working relationship.

2.1.2 *Challenges for Design and Business*

> *Design is suffering from a PR problem,*
> *which leaves it misunderstood and undervalued by government,*
> *underused by business and misrepresented in the media.*
> (All-Party Parliamentary Design and Innovation Group, 2013).

It seems the challenge for many business leaders, especially those who do not have a *Design* background, is how they should lead with *Design* (Bucolo, Wrigley, & Matthews, 2012; Micheli, 2014; Westcott et al., 2013).

Boland & Collopy (2004) argue that, when it comes to understanding *Design*, business managers vary between having an abstract understanding of it and dismissing it as frivolous. Nussbaum (2007) claims, "CEOs and top managers hate the word "because it is superficially associated with "curtains, wallpaper, and maybe their suits" (para. 8). Nussbaum blames the situation on "ignorant CEOs" and "ignorant designers" (para. 20). Although Rae (2013) states that business managers reject *Design* because it is "tough to measure, hard to isolate as a function, and tricky to manage" (p.31).

Traditionally, a company's final *Design* decision was the responsibility of the accountant. Thus, the accountant could determine a designer's worth (Hertenstein & Platt, 2000). Unsurprisingly, many business managers view *Design* as "wasted money" (de Mozota, 2002, p. 89). However, as Heskett (2008) notes, "*Design* is a professional business activity practised overwhelmingly within business contexts" therefore, designers must be able to "argue the economic relevance of their practice in convincing terms" (Heskett, 2008, p.71).

Design as a profession has no accreditation and no protection of title; therefore, the declaration, "I am a designer" is not recognised in the same way as an engineer or architect (All Party Parliamentary Design & Innovation Group, 2013). Furthermore, if people do not understand what designers do, they are less likely to consider it a prestigious occupation (Smith, 2005).

In the *All-Party Parliamentary Design and Innovation Group* (APDIG) term paper, *Defining Design: The Debate: How Design is presented in the media, business and government*, contend the problem with *Design* is that it is difficult to know what "counts as *Design*" (Moultrie, 2013, p. 3).

In *Essay Five* of the same paper, Courtney (2013) called out newspaper editors for inciting mistrust of *Design* in the public mindset. Courtney blamed the misreporting of fees paid to a *Design* firm for their work on the *New Bus* for London, which subsequently caused public outrage at the money spent on *Design*. Courtney states,

> the implication that this was wasted money does a huge disservice to the value of *Design* while adding to the depressing dialogue of how designers can be treated in the national press. Is it any wonder that a great many creatives don't describe themselves as designers because it is not a respected term (Courtney, 2013, p.11).

It seems, as argued by Bremner and Rodgers (2013) that *Desig*n, once again finds itself in a predicament. However, Main (2002) and Heskett (2008) argue that the differences are due, in part, to the contrasting approaches both parties have to *Design*. Fundamentally, managers and designers think differently.

Main (2002) proposed that engineers view *Design* as a technical process. In contrast, graphic designers give priority to the visual aesthetic communicated through their *Design* process. Engineers are known to limit *Design* to a function and are stereotyped as lacking in communication skills (Lloyd & Busby, 2001; Main, 2002). All these differences contribute to misunderstandings in communication.

Michlewski's (2008) research investigated the *Design* attitude of *Design* and business professionals. Michlewski determined that *Design* within an organisation "tends to concentrate on the notion of careful planning, up-front decision making and alignment with predefined criteria" (p.385). In contrast, for designers, *Design* is an exploration of their vision within a conceptual plan.

Although, *Design* is sometimes considered a "global phenomenon" (Julier, 2008, p.1), it has no accepted definition or theoretical perspective. *Design* is not academically endorsed or publicly recognised as a profession (Love, 2002; Margolin, 1989; Melvin, 1993; Ralph & Wand, 2009; Ulrich, 2011b).

Thus, there is no simple explanation to describe the complex concepts under the term *Design* (Buchanan, 1995).

Opposing views of *Design* would contribute to the disagreements between the *Design* disciplines themselves. Carvalho, Dong, and Maton (2009) maintain that the *Design* professions disagree on "what knowledge one needs to design and what is the 'right' kind of knowledge" (p.483). Furthermore, it seems, each *Design* discipline assumes people agree with their point of view.

Paolini (2015) maintains that the word *Design* is so overused that it has lost meaning or value in conversation. Paolini states that the only way to see *Design* as more powerful is to refer to it as "a process, not a lifestyle" (para. 13).

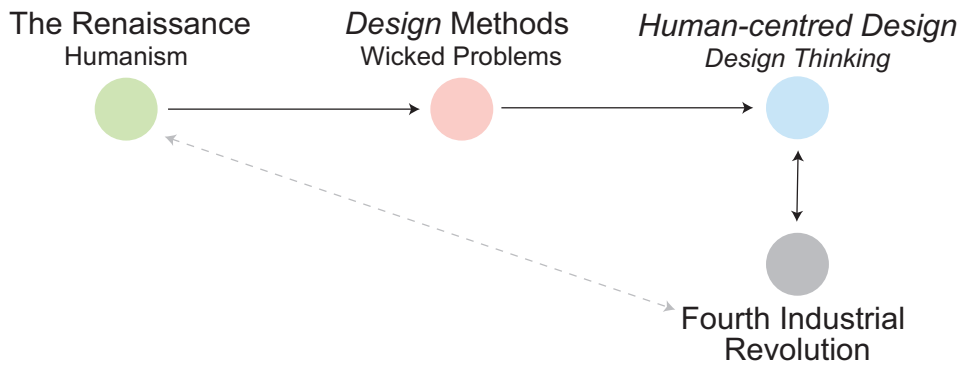
Based on the foregoing review, it is clear that the debate about the meaning of *Design* in business, as Rae (2013) has observed, is ongoing. A cursory examination of the evolution of *Design* throughout human history will add further nuance to the meaning of *Design*.

2.2 The Design Scene Timeline

This section outlines areas contributing to the meaning of *Design* over time. Figure 3 highlights the connection between the Renaissance and its focus on placing humans at the centre of social disruption to the 21st century recognition of *Design*, wicked social problems and *Human-centred Design*.

Figure 3

Flow of Areas Contributing to the Design Scene Timeline

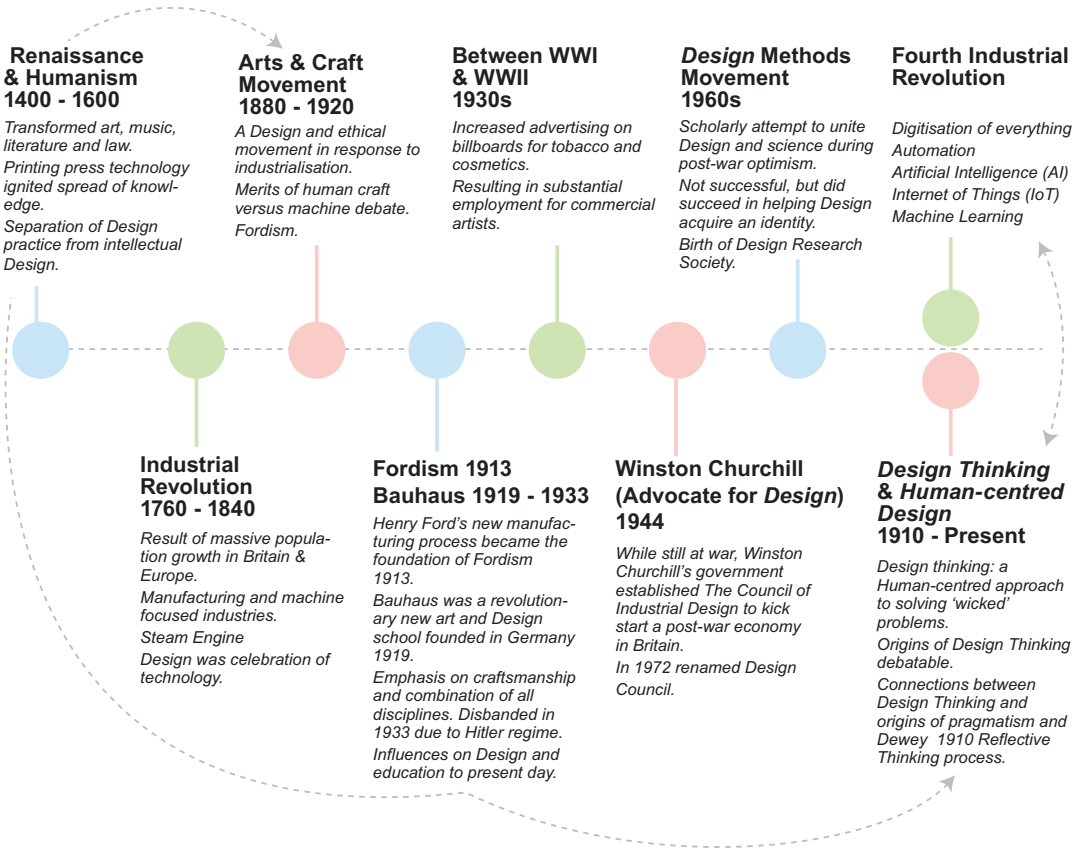


Design in history does not have an exact starting point. For instance, our human ancestors' first stone tools are evidence of our human ability to *Design* (Friedman, 2000; Muratovski, 2016). Furthermore, after acquiring knowledge of the seasons, these initial designers created tools and solutions to combat their food shortages and thereby, advance cultural and economic growth in society (Marlowe, 2005). For this research, the Renaissance, meaning 'rebirth' in French, is chosen as the timeline's starting point.

Figure 4 is a graphical representation of the timeline discussed in the following sections. The dotted lines highlight the links between humanism during the Renaissance, human creation during the Arts and Craft movement and, to some extent, the focus on human craftsmanship in the Bauhaus school through to the present day, *Human-centred Design* and the Fourth Industrial Revolution.

Figure 4

Timeline of Design from the Renaissance to Present



In Figure 4 the dotted lines represent the human-centred connection of the Renaissance, the Arts and Crafts Movement, the Bauhaus and 21st century attention on *Human-centred Design* for solving challenging human problems.

2.2.1 *The Renaissance and Humanism.*

Art historians, literary scholars and historians are known to disagree on dates for the Renaissance. Generally, however, the Renaissance is associated with Florence, Italy, and an extreme transformation in society, principles and art. Brotton (2006) describes the period as,

> a profound and enduring upheaval and transformation in culture, politics, art, and society in Europe between the years 1400 and 1600 (Brotton, 2006, p.8).

This Renaissance became the foundational concept of humanism. However, there are numerous scholarly debates about the meaning of 'humanism' (Brotton, 2006).

According to Brown (1999), early humanism was not an 'ism' movement as we know it in the 21st century. Similar to a belief or word, it did not exist during the fifteenth century. Although Brown (1999) describes the name as "useful because it suggests that human values were considered more important [than] the transcendental values stressed by the Church" (p.62). Brown states that,

> the word *humanista* emerged in the late Renaissance as student slang to distinguish a liberal-arts student from a civil lawyer (*legista*) or a canon lawyer (*canonista*) (Brown, 1999, p.62).

Around 1450, Johannes Gutenberg's invention of the printing press, with moveable type, activated an unprecedented spread of knowledge, changing communication forever and further challenging the controlling authority of the Church (Bolton, 2006). Moreover, this new printing technology ignited a unique demand for books, which spawned supply industries such as papermaking and significant public literacy.

Humanists, in particular, were quick to realise the importance of this new technology for disseminating their knowledge of the new arts (Brotton, 2006). During this period, intellectual thought separated *Design* from its practical execution (Buchanan, 1995; Julier, 2008). In other words, *Design* became a visual representation of something. It was not associated with intellect and thinking.

In the book *Discovering Design*, Buchanan (1995) notes that this separation weakened the importance of *Design*. Buchanan states that *Design* became

> fragmented into the specialisations of different types of production, leaving its connection with other human enterprises and bodies of knowledge vague and uncertain (Buchanan, 1995, p.34).

The result was that *Design* became subservient rather than part of a broader humanistic inquiry (Buchanan, 1995). These *Design* changes occurred during a period that gave birth to,

> the modern individual as well as the social and cultural institutions that define so many people in the western world today (Bolton, 2006, p.9).

More than three hundred years later the Industrial Revolution became the next equally disruptive time for humanity and *Design.*

2.2.2 *Industrial Revolution*

From 1760 onwards, Britain and Europe experienced massive population growth. Manufacturing became the all-encompassing focus for industry and the primary source of economic growth.

The Industrial Revolution was a time of massive technological change. Inventions such as the steam engine, electricity, petroleum and internal combustion engine changed the world (Elliott & Jacobson, 2002; Rafferty, n.d.). A new work system emerged from these technological advancements known as the "factory system, which entailed increased division of labour and specialization of function" (Rafferty, n.d., para. 4).

The Industrial Age, also known as the Industrial Revolution, was a time of dramatic growth, research and investigation (McDermott, 2007). The influential *Great Exhibition* of 1851 was considered a "celebration of the new technology and inventions of the Industrial Revolution". The architecture of the building that housed the *Great Exhibition* became hugely influential in showcasing the future of *Design* to the British public (McDermott, 2007, p.123).

However, this industrialisation of *Design* came at a cost. Many saw it as the erosion of traditional human values and the Arts and Crafts Movement emerged (McDermott, 2007).

2.2.3 *Arts and Crafts Movement*

The Arts and Crafts Movement emerged in the middle to late 19th century. It was a response to the effects of ongoing industrial advancement. It was not only a *Design* style; it was considered an "ethical movement" protesting against the effects of industrial advancement on human lives (McDermott, 2007, p. 21). In particular, the movement developed because:

> By 1860 a vocal minority had become profoundly disturbed by the level to which style, craftsmanship, and public taste had sunk in the wake of the Industrial Revolution and its mass-produced and banal decorative arts (The Editors of Encyclopedia Britannica, 2019, para. 3).

The Arts and Crafts movement placed Britain at the centre of a new interest in *Design*. In particular, it emphasised an appreciation for the decorative arts. One of the founders, William Morris (1834-96), focused on reviving traditional art and craft methods and is considered an influential figure in artisan *Design*.

However, the disruption caused by World War I (1914 -1918) led to the eventual decline of the Arts and Craft movement. Still, the debate on the merits of craft versus machine and the purpose of *Design* continues (McDermott, 2007).

2.2.4 *Fordism and Bauhaus*

Henry Ford (1863-1947) was the founder of the Ford Motor Company. In 1913, Ford pioneered a mechanised manufacturing process for mass production that became known as Fordism. The Ford Motor car transformed peoples' perception of freedom and the term Fordism came to represent "modernity" (Jessop, 2020; Whitford, 1984). Furthermore, American Fordism promoted the concept of an "ideal society in which all people were both rich and equal" (Whitford, 1984, p.142).

However, during WW1, Germany was advocating for "the reform of art education" because the country considered it "vital for economic reasons" (Whitford, 1984, p.28).

The Bauhaus, a revolutionary new art school, was founded by architect Walter Gropius in Germany in 1919. Gropius, a keen follower of Fordism (Whitford, 1984), aimed to unite every *Design* discipline as a type of,

> unified work of art, the reunification of the artistic disciplines - sculpture, painting, arts and crafts - to form a new type of architecture (Bauhaus Archive Museum, n.d., para 1).

Terrified by an encounter with the machines' power during World War I, Gropius became convinced that technology was not a positive contribution to German reform. It was not until Hungarian Lazlo Moholy-Nagy joined the Bauhaus teaching staff in 1922 that Bauhaus schedules embraced the unity of art and technology (Whitford, 1984).

In 1933 the Hitler regime forced the Bauhaus school's closure (Bauhaus Archive Museum, para. 15). The Bauhaus school set many present-day standards for *Design*. They continue to profoundly influence *Design* aesthetics, form and structure in architecture, industrial *Design*, and other disciplines (Whitford, 1984).

2.2.5 *Between WWI and WWII*

In the 1930s, after World War I and before WWII, there was a significant increase in the number of commercial artists employed by advertising agencies. This new focus on professional *Design* was relative to the upsurge in advertised products, such as tobacco and cosmetics, on outdoor billboards (Kirkham & Weber, 2013).

2.2.6 *Winston Churchill (Advocate for Design)*

In 1944, Winston Churchill's government, while still in the throes of WWII, established the Council of Industrial Design. The council aimed to kick start a post-war economy in Britain. Their task was to promote "by all practicable means the improvement of *Design* in the products of British industry" (Design Council, 2020, para 1).

After WWII and throughout the 1950s, *Design* became recognised as the foundation of the British economy. During the 1960s, British *Design* achieved worldwide recognition.

Consequently, in the second half of the 20th century, *Design* became associated with mass manufacturing and consumer products marketing.

In 1972, acknowledging the expanding boundaries between industrial *Design*, technology and engineering, the Council of Industrial Design became the Design Council (Design Council, 2020).

2.2.7 *Design Methods Movement*

In the 1960s, in a "state of post-war optimism", designers decided to re-evaluate and unify *Design* by aligning it with scientific thinking (Langrish, 2016, p.1). Although *Design* and science had previously connected in the 1920s, the relationship resurfaced in the 1960s through the *Design Methods Movement* (DMM). Scholars such as Bruce Archer, John Chris Jones, Christopher Alexander and Horst Rittel initiated the DMM (Langrish, 2016).

Advocates such as Buckminster Fuller also actively promoted the convergence of *Design* and science "to overcome the human and environmental problems that…could not be solved by politics and economics" (Cross, 2001, p.1).

Herbert Simon, in *The Sciences of the Artificial*, initially published in 1969, accused universities of "hankering" after "academic respectability" because they did not value "designing" and preferred to align themselves with "solid-state physics" (Simon, 1996, p.112). Simon called for the *Design* process to taught in higher education as an academically robust "science of design" (Cross, 2001, p.1).

However, the DMM was not successful in fulfilling its aim of creating a better world through the partnership of *Design* and science. It did succeed, to some extent, in helping *Design* acquire its own identity with specific rules and expectations (Julier, 2008; Langrish, 2016).

The *Design Research Society* (DRS), which is still currently active, became an official organisation at an early DMM conference. In the 1970s, a few of the original DMM advocates rejected *Design's* association with scientific principles.

They claimed it was impossible to apply scientific thinking to *Design* because Design dealt with social problems that are inherently 'wicked' problems (Cross, 2001). The following section defines wicked problems.

2.2.8 *Defining Wicked Problems.*

Horst Rittel, a DMM original advocate, eventually rejected the premise that *Design* and science could unite. Rittel and Webber (1973) joined forces and argued the DMM had made a "serious error" in thinking. They claimed it was not possible for "social professions … [to] be applied scientists" (p.160). Science dealt with tame problems that involved linear thinking. In contrast, most social issues were "inherently wicked problems" (p.160). The term "wicked problem" describes ill-defined situations. In other words, problems that do not have defining boundaries and the opposite to tame problems.

Wicked problems have no 'right' solution, nor is there an 'end' to the problem (Rittel & Webber, 1973). In solving a wicked problem, as solutions emerge, they too can reveal previously unknown issues. See Table 1 for Rittel and Weber's (1973) ten considerations for identifying wicked problems.

Table 1

Rittel and Weber (1973) Defining Wicked Problems

	Considerations (Rittel & Weber, 1973, pp. 161-167)	Description
1	There is no definitive formulation of a wicked problem.	…knowledge of all conceivable solutions is required (p.161).
2	Wicked problems have no stopping rule.	There is no logical solution to the criteria. The process stops due to external considerations (p.162).
3	Solutions to wicked problems are not true-or-false, but good-or-bad.	Assessments of proposed solutions are expressed as "good" or "bad" or, more likely, as "better or worse" or "satisfying" or "good enough" (p.163).
4	There is no immediate and no ultimate test of a solution to a wicked problem.	Any solution, after being implemented, will generate waves of consequences over an extended…unbounded period of time (p.163).
5	Every solution to a wicked problem is a "one-shot operation"; because there is no opportunity to learn by trial-and-error, every attempt counts significantly.	Every implemented solution is consequential. It leaves "traces" that cannot be undone (p.163).

	Considerations (Rittel & Weber, 1973, pp. 161-167)	Description
6	Wicked problems do not have an enumerable (or an exhaustively describable) set of potential solutions, nor is there a well-described set of permissible operations that may be incorporated into the plan.	Feasible plans of action rely on realistic judgment, the capability to appraise "exotic" ideas and on the amount of trust and credibility between planner and clientele that will lead to the conclusion, "OK let's try that" (p.164).
7	Every wicked problem is essentially unique.	One can never be certain that the particulars of a problem do not override its commonalities with other problems already dealt with (p.165).
8	Every wicked problem can be considered to be a symptom of another problem.	The higher the level of a problem's formulation, the broader and more general it becomes and the more difficult it becomes to do something about it… (p.165).
9	The existence of a discrepancy representing a wicked problem can be explained in numerous ways. The choice of explanation determines the nature of the problem's resolution.	People choose those explanations which are most plausible to them… The analyst's "world view" is the strongest determining factor in explaining a discrepancy and, therefore, in resolving a wicked problem (p.166).
10	The planner has no right to be wrong.	The aim is not to find the truth, but to improve some characteristics of the world where people live. Planners are liable for the consequences of the actions they generate (p.167).

Table 1 displays the ten considerations defined by Rittel and Weber (1973) alongside descriptions from their text (pp. 161-167).

The process of finding solutions for wicked problems has become the central element of *Human-centred Design* and subsequently, the driving force behind *Design Thinking* for business.

As Cross (1999) notes, "*Design* knowledge resides firstly in people: in designers especially, but also in everyone to some extent. Designing is natural human ability" (p.5).

2.2.9 *Human-Centered Design*

IDEO is a *Design* company recognised as a leader in *Human-centred Design*. The company's free educational resources for *Human-centred Design* include *The Field Guide.* IDEO define *Human-centred Design* as,

> …believing that all problems, even the seemingly intractable ones like poverty, gender equality, and clean water, are solvable. Moreover, it means believing that the people who face those problems every day are the ones who hold the key to their answer.

> *Human-centered Design* offers problem solvers of any stripe a chance to design with communities, to deeply understand the people they're looking to serve, to dream up scores of ideas, and to create innovative new solutions rooted in people's actual needs (*Design* Kit, 2015, p.9).

Generally, *Human-centred Design* seeks solutions for wicked social problems. As defined by IDEO, *Human-centred Design* issues, such as poverty and gender equality, are solvable. However, these are wicked problems because solutions are not easily defined and the problems have no stopping rule (Rittel and Weber, 1973). Furthermore, the process is not just for designers; anyone, anywhere, who requires a solution for a social problem can contribute to *Human-centred Design* (IDEO.org, 2015).

At present, the Victorian Government in Australia is actively promoting *Human-centred Design* to provide *Design* solutions for a public sector impacted by climate change and the coronavirus outbreak. Mathan Ratinum, the Lead Service Designer from the *Digital, Design and Innovation* branch of the Victoria State Government, defines *Human-centred Design* as:

> an approach to problem-solving that puts the people we are designing for at the heart of the process (Ratinum, 2020, min: 3:21).

Closely associated with *Human-centred Design* is *Design Thinking,* which is a business process for solving social problems.

2.2.10 *Design Thinking*

Design Thinking is a method for solving social problems. The process encourages problem-solving through cross-disciplinary collaborations. *Design Thinking* places people at the centre of the problem-solving process closely aligning with *Human-centred Design* (Buchanan, 1992; Dorst, 2011, Norman, 2018; Ratinum, 2020).

In 1992, the *Design Thinking Research Symposium* explored the connection between *Design* research and *Design* methods from the viewpoint of *Design Thinking*. Dorst (2011) points out that various *Design Thinking* models began to appear after this 1992 *Design Thinking Research Symposium*.

However, in was not until 2008 and *Harvard Business Review* (HBR) published an often cited article by Tim Brown, the CEO and President of *IDEO*, titled *Design Thinking.* This article introduced a public audience to the details of the *Design Thinking* process and, in particular, its benefits and application for business.

In this HBR article, Brown (2008) defined *Design Thinking* as,

> a discipline that uses the designer's sensibility and methods to match people's needs with what is technologically feasible and what a viable business strategy can convert into customer value and market opportunity (Brown, 2008, p.86).

Brown argued that *Design Thinking* allowed designers to be more than makers of beautiful "wrapping" and become strategic creators of ideas "that better meet consumers' needs and desires" (p.86). However, anyone can practice *Design Thinking*, not just someone trained in *Design*. Brown described the *Design Thinking* process as a "system of spaces" that show related actions that eventually come together to create innovation (p.88). Fundamentally, then, *Design* "is about envisioning change" (Heskett (2008).

In Brown's (2008) *Design Thinking* model, the first phase was *Inspiration*. This step encouraged an expectation of success amoung cross-disciplinary collaborators, followed by defining the problem or issues to be resolved. The *Human-centred Design* aspect entered at this stage by engaging or observing with people affected by the problem at hand, such as customer needs.

The second category was *Ideation*, which involved organising the information, brainstorming ideas, and rapidly creating prototypes of the plans.

The third category was *Implementation*, where the final solution was completed and then presented. The cycle could be repeated ad infinitum. Presently, there are many variations for *Design Thinking*, but they are fundamentally similar to Brown's version from 2008.

Dalsgaard (2014) connects *Design Thinking* to the philosophical position of pragmatism and the philosophy of John Dewey.

Dewey's book *How We Think,* published in 1910, included a method for his *Reflective Thinking.* Dalsgaard points out that Dewey's five steps for *Reflective Thinking* are similar to the process of *Design Thinking* described by Brown (2008).

Table 2 demonstrates the steps for *Reflective Thinking* proposed by Dewey (1910) and Brown's (2008) phases for *Design Thinking*.

Table 2
Comparison of Reflective Thinking and Design Thinking

	Dewey (1910) *Reflective Thinking*	**Brown (2008) *Design Thinking***
1	Felt difficulty.	Inspiration: defining the problem or issue to be resolved.
2	Its location and definition.	The thoughts and wants of the people involved in the issue.
3	Suggestion of a possible solution.	Ideation: organising the information, brainstorming ideas.
4	Development by reasoning of the bearings of the suggestion.	Rapidly creating prototypes of the ideas.
5	Further observation and experiment leading to its acceptance or rejection.	Implementation: final solution completed and then presented.

Bryan Lawson (2006) first published *How Designer's Think* in 1980, in which he set out to understand *Design* problems. In a chapter titled *Design Thinking,* Lawson (2006) highlighted many different theories of thinking.

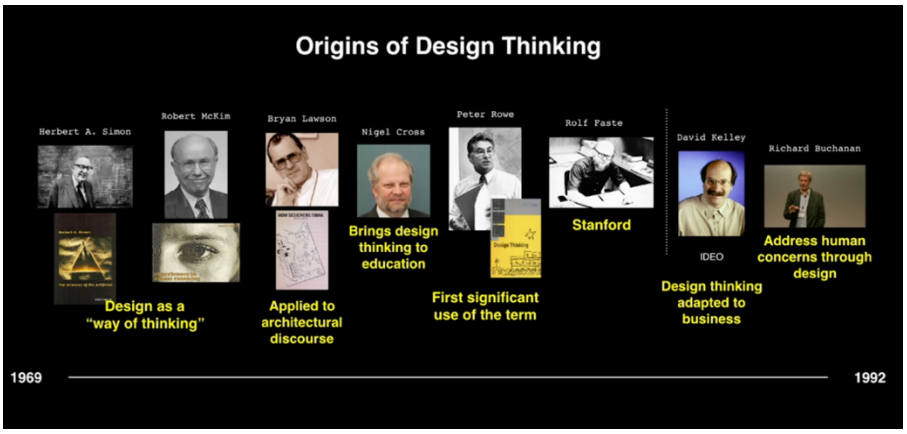
Lawson stated,

> "The new cognitive approach to human thinking sees human beings as much more adaptable and genuinely intelligent organisms than the early behaviourist approach" (Lawson, 2006, p.135).

However, Jen (2018) claims that Peter Rowe, a *Professor of Architecture and Urban Planning* at Harvard University, was one of the first to use the term with his 1987 book *Design Thinking.* Either way, all these scholars significantly contributed to the development of *Design Thinking*. Figure 5 is a screenshot from a presentation about the origins of *Design Thinking* (Jen, 2018).

Figure 5

Origins of Design Thinking (Jen, 2018)



Jen, N. (2018, March 19). *Natasha Jen: Design thinking is bullsh*t* [Video, 6:31 minutes]. The 9th 99U Conference June 7-9, New York City. YouTube. https://youtu.be/_raleGrTdUg

Currently, there are many variations on what constitutes the process for *Design Thinking.* Szczepanska (2017), describes *Design Thinking* as an "amalgamation of approaches" and an "umbrella term" (para.3). In comparison, Kolko (2015) claims that *Design Thinking* creates a *Design* focus for business that humanises technological development.

Buchannan (1992) in a well-known article *Wicked Problems in Design Thinking,* called for recognition of *Design Thinking* as a "surprisingly flexible activity" and a "new liberal art of technological culture" (p.5).

Many years later, Nussbaum (2011), an initial supporter of *Design Thinking*, declared it was failing in business. Nussbaum claimed few businesses managers allowed for the "conflict, failure, emotions and looping circularity that is part and parcel of the creative process", which affected their implementation of *Design Thinking* (para. 7).

In 2018, Liedtka released findings from an examination of 50 projects over seven years that looked for evidence of changes brought about by *Design Thinking.* Liedtka found that the general methodology of *Design Thinking* was helpful for business managers who, as probable non-designers, were required to adjust to unusual activities. Liedtka found that *Design Thinking* helped avoid group biases as well as overcome issues caused by "workplace politics" (Liedtka, 2018, p.79).

However, Leidtka did come across negativity from professional designers who discounted *Design Thinking's* step-by-step process as an incomplete *Design* method.

The Stanford *d.school*, established in 2005, has become a significant force in creating a worldwide status for *Design Thinking* (d.school.stanford.edu, n.d.). As *Design Thinking* is not without its critics, the following section looks at suggestions targeted at summarising *Design Thinking* processes.

2.2.11 *Recommendations for Design Thinking*

Fiell and Fiell (2019), authors of more than 60 books on *Design,* claim that *Design Thinking* has lost its way. The authors suggest that *Design Thinking* is often,

> superficially applied, as a sort of one-size-fits-all formula for problem solving, when in actuality it is a much deeper and more important exercise that invariably benefits from a rigorous knowledge of design theory (Fiell and Fiell, 2019, para. 8).

Jen (2018), voted as one of nine *Designers Who Matter* by Wired magazine in 2014, is not a supporter of *Design Thinking*. Jen (2018) is concerned that *Design Thinking* is no more than a catchword and no one seems to be criticising it. Jen argued that "crit" (criticism) was the missing component of *Design Thinking*. Criticism, she maintained, was a core element of what designers do.

Vassallo (2017), in his book *The Way to Design,* states that *Design Thinking* needs an overhaul. The first steps in the process are often defined under the label 'empathy'. In that, the designer must put themselves in someone else's shoes to see the problem from their perspective. Vassallo claims 'empathy' has become a 'buzzword'. He urged the problem solver [designer] to "practice rigorous evidence-based compassion, rather than trying to feel people's pain" (Vassallo, 2017, p.86).

Buchannan (1992) points out that the people coming together in *Design Thinking* collaborations are there because they have a common bond through the issue at hand. Buchannan argued that it is essential that people discover what is helpful in each other's work in these situations.

The emergence of *Design Thinking* has been a significant turning point for *Design*. It shows how *Design* fits within cultures of knowledge specialisation and disciplinary segregation in education (Buchannan, 1992). Muratovski (2015) argues that *Design* is "increasingly being recognized as a strategic resource" (p.212). Vassallo (2017) contends that *Design Thinking,* in particular, would benefit from including *Systems Thinking*, yet he concedes most *Design* professionals would find the process unfamiliar. Vassallo argues,

> Systems thinking is a mindset – a way of seeing and talking about reality that recognizes the interrelatedness of things (Vassallo, 2017, p.93).

Design Thinking is not a one size fits all method, and some *Design* theory knowledge is beneficial for better outcomes (Fiell & Fiell, 2019). Essentially, the application of *Design Thinking* is a wicked problem. Any collaboration should consider the abilities of individual contributions (Buchannan,1992). Nevertheless, people must feel able to critique the results (Jen, 2018). As empathy with the problem is not always possible, designers could benefit from combining *Design Thinking* with systems thinking (Muratovski, 2015; Vassallo, 2017).

Design Thinking can help businesses formalise a *Design* process that places people at the centre of their business decisions (Brown, 2008; Buchannan, 1992; Liedtka, 2018; Nussbaum, 2011). Moreover, the next industrial revolution has already started (Schwab, 2017). How countries understand *Design* may be central to their future economic achievements.

2.2.12 *Fourth Industrial Revolution*

Klaus Schwab (2015), founder and executive chairman of the *World Economic Forum* (WEF), argues that human beings are on the edge of the Fourth Industrial Revolution. Schwab claims the First Industrial Revolution was water to power steam. The Second Industrial Revolution saw electrical power create mass production. The Third Industrial Revolution bought electronics and information technology to automate production. The Fourth Industrial Revolution is the impact of rapid technological advancements on human beings and domains, including economies and business.

Other predictions include Drucker (1994), who anticipated the Third Industrial Revolution when he advised that unprecedented access to knowledge would be the next social and economic driver of change.

For Mau (2004), the creator of the *Massive Change* movement, the next industrial revolution was about "economy, ecology and equity" (p. 191). Mau argued that, because people were ultimately responsible for their environment, *Design* would emerge from insignificance to become "the biggest project of all" (p. 16).

Like Mau, Fry (2009) argued that human beings were at a turning point in their survival and to live sustainably, we must *Design* for a better world.

Schwab (2015), however, is concerned that in a *Fourth Industrial Revolution*,

> …organizations might be unable to adapt; governments could fail to employ and regulate new technologies to capture their benefits; shifting power will create important new security concerns; inequality may grow; and societies fragment (Schwab, 2015, para. 3).

In 2020, the world changed in ways that neither Drucker (1994), Mau (2004), Fry (2009) or Schwab (2015) could have ever predicted. For instance, Australia has "plunged into its first recession in nearly 30 years, as it suffers the economic fallout from the coronavirus" (BBC News, 2020). No one knows precisely how the Fourth Industrial Revolution may impact a post-pandemic world. Scwab (2015) warns leaders and citizens they must:

> …shape a future that works for all by putting people first, empowering them and constantly reminding ourselves that all of these new technologies are first and foremost tools made by people for people (para. 5).

If, as speculated by Mau (2004), *Design* emerges as a central player for our human survival, then the meaning of *Design* will significantly impact *Design* decisions for governments and policymakers.

2.2.13 *Design Policy*

Don't do things today that make tomorrow worse.
(Shedroff, 2009*).*

The researcher found it challenging to provide a succinct definition for *Design* policy. However, in a *Design for Europe* feature article titled, *What is Design Policy*, author Mortati (2017), Assistant Professor in *Design*, Politecnico di Milano, used the following definition. Mortati claims this definition applies to existing *Design* policies in different countries.

> *Design* policy can be defined as the process by which governments translate their political vision into programmes and actions in order to develop national *Design* resources and encourage their effective use in the county (Raulik-Murphy and Cawood, 2009 in, Mortati, 2017, para. 3).

Japan was one of the first countries to look at *Design* to support their economy (Margolin, 2007). According to Hirose (2008), the *Ministry of Economy and Industry, Craftwork Training Center* (in Sendai, Japan) opened in 1928. Its purpose was to "revitalise rural industries through the power of *Design*" (slide.4). Hirose admits that Japan's first *Design* policy initiatives were "acts against copying". However, since that time, the country has continually focused on promoting *Design* for economic advantage (Hirose, 2008, slide.15).

Moreover, Asian countries such as Korea, China, Taiwan and Singapore have adopted the Japanese *Design* policy model (Margolin, 2007).

In 1997, Denmark became officially known as the first country to activate a national *Design* policy. The purpose of the policy was to "increase *Design* awareness in small and medium-sized enterprises (SMEs), as well as in the public sector" (Scherfig, Brunander, & Melander, 2010, p.7). Denmark has since gained a worldwide reputation for *Design* expertise, which is in keeping with its aim to be "known worldwide as the *Design* society" (The Danish Design 2020 Committee, 2011. p.8).

The Indian Government launched a *National Design Policy* in 2007 and the Indian Design Council, established in 2009, became the voice of *Design* for India. The council receives continued support from the Indian Government (India Design Council, n.d.). However, *Design* education has been a significant challenge for the Indian Government. In 2016, to address the problem, the British Council and India Design Council collaborated on *The Future of Design Education in India.* The initiative sought to address the disconnect between *Design* education and practising *Design* requirements for India (British Council & India Design Council, 2016).

It seems the year 2010 was a turning point for advances in *Design* policy. Since that time, "governments in Denmark, Estonia, Finland, France, Ireland and Latvia as well as the European Commission have developed Design Action Plans" (Whicher, 2017, p.117).

Australia, in 2010, launched the publicly funded Australian Design Alliance (ADA) to support a *National Design Policy*. However, ten years on and the organisation is still hoping to "embed a National *Design* Policy (NDP) into the Australian Innovation Agenda" (Australian Design Alliance, n.d., para.3).

Other countries, such as China, have also been working towards implementing changes through *Design*. The *Chinese Central Government* unveiled a policy in 2015 called, *Made in China in 2025* and additional initiatives to the policy include innovation and *Human-centred Design* (Xihui Liu, Liu & Zhang, 2018).

In 2015, Malcolm Turnbull, then Prime Minister of Australia, presented the *National Innovation and Science Agenda*. The government plan focused on boosting innovation and science in four key areas, *Culture and capital*, *Collaborations*, *Talent and skills* and *Government as exemplar*.

However, the report included just three mentions of *Design* in the context of 'designing', 'co-*Design'* and 'designed' (Commonwealth of Australia, Department of the Prime Minister and Cabinet, National Innovation and Science Agenda, 2015). The three mentions of *Design* are shown below (emphasis added):

1. Emma spends $500k on *designing* software for her new 3D printer (p.9).
2. Emma accesses the expanded Innovation Connections programme to fund a scientist that helps *co-Design* her prototype printer (p.9).
3. The ATO's mobile apps team *designed*, built and delivered the app (p.14).

The term ‘designer’ did not appear in the document at all. This lack of attention to *Design* is not an oversight, “the relationship between innovation and *Design* policy is both weak and fragmented” (Hobday, Boddington, & Grantham, 2012, p.279).

In another government report, *Australia 2030 Prosperity through Innovation. A plan for Australia to thrive in the global innovation race,* there were 39 references to *Design* throughout its 117 pages. Although no section discussed *Design* and the word designer did not appear. The report did, however, mention *Human-centred Design* and its relationship to *Design Thinking,* once, in the following context:

> reinventing customer journeys using digital and design thinking; using customer journeys to empower frontline employees; and establishing metrics and a governance system (Australian Government & Innovation and Science Australia, 2017, p.72).

There are no other references to *Design Thinking* or subsections about *Design*. The wording quoted above does not articulate how *Design Thinking* will contribute to the plan.

On taking office, the next Prime Minister of Australia, Scott Morrison, disbanded the Turnbull government’s innovation programme. However, the Australian Centre for Social Innovation (TASCI) formed in 2009 as an initiative of the South Australian Government, is alive and well. The organisation has evolved to become an “independent social enterprise working on projects and initiatives across Australia ...to develop new and better ways to build social and economic prosperity for all” (Australian Centre for Social Innovation, n.d., para 1).

In New Zealand, the Department of the Prime Minister and Cabinet (DPMC) has an initiative called *The Policy Project.* The DPMC provides a wide selection of publicly available resources and tools to assist with policy creation. The tools provided include information and resources about *Design Thinking, Journey Mapping* and other items. The DPMC also promote a universal *Policy Quality Framework* for “greater cohesion across agencies” (Department of the Prime Minister and Cabinet, n.d., para.8).

Design policy is transitioning from something that was once considered an optional, yet helpful inclusion for business. It is becoming essential to forward-thinking organisations and their economic planning (Hobday et al., 2012; McDermott, 2007).

Finland is a unique example of a country with a well-developed *National Design Policy*. The policy began as a government initiative. In consultation with its *Design* sector, the government allocated money for implementation of a *Design* policy. Finland's *National Design Policy* was a contributing factor "towards helping Finland grow out of the economic stagnation the country was in, following a severe economic recession in the late 1980s" (Bom, 2008, para. 6).

Despite government efforts to promote innovation in Australia's past, it seems the contribution of *Design* to the Australian economy was not recognised or valued. Australia's governments either dismissed *Design,* did not understand it, or were unable (or unwilling) to confidently, classify, justify or evaluate *Design* beyond innovation or creativity (Spilsbury, 2013).

Then, in September 2020, the Australia Design Council was re-launched. The Australian Design Council (ADC) was previously the Industrial Design Council of Australia (IDCA). The original council (IDCA) was established in 1958 and based on the British Design Council model set up by Winston Churchill's government in 1944 (Good Design Australia, n.d.).

The Prime Minister of Australia, Scott Morrison, endorsed the Australian Design Council (ADC) in an open letter saying:

> Good *Design*, created by smart people in smart industries, is essential to a country that wants to grow and be prosperous. The envisaged Australian Design Council is about inspiring Australian businesses to embrace design as a tool for growth.
>
> The impacts of COVID-19 have been profound: on our society and economy, on individuals and communities. The tragedy of COVID-19 has a human face, and our recovery is a human endeavour. That's why the ADC's journey to its current, refocused and re-energised form, is so exciting. It's the kind of adaptability – building

> opportunity out of adversity – that will carry Australia into recovery (The Hon Scott Morrison, MP Prime Minister of Australia, 2020)

The Australian Design Council's vision, mission, objectives and activities aim to use a *Design Thinking* approach to *Human-centred Design,* and they have created a *Design* manifesto to this effect (Good Design Australia, 2020). The manifesto contrasts with previous reports that imply *Design* is a secondary consideration for creativity and innovation (Hobday et al., 2012).

2.2.14 *Creativity, Innovation and Design*

The 2005 *Cox Review of Creativity in Business: building on the UK's strengths* aimed to "establish UK design policy for the 21st century" (McDermott, 2007, p. 86). According to Sir George Cox, the purpose of the review was "how to exploit the nation's creative skills more fully" (HM Treasury, Cox Review, 2005, p.1).

The report defined creativity, innovation and *Design* in the following way:

> *Creativity* is the generation of new ideas – either new ways of looking at existing problems or of seeing new opportunities, perhaps by exploiting emerging technologies or changes in markets.
>
> *Innovation* is the successful exploitation of new ideas. It is the process that carries them through to new products, new services, new ways of running the business or even new ways of doing business.
>
> *Design* is what links creativity and innovation. It shapes ideas to become practical and attractive propositions for users or customers. *Design* may be described as creativity deployed to a specific end (HM Treasury, Cox Review, 2005, p.2).

It is worth noting that *Design's* general description in the *Cox Review* and its third position in the list shows that *Design* was not a driving force behind the report.

A parallel study by the British *Department of Trade and Industry* (DTI) titled *Creativity, Design and Business Performance* examined the "impact of creativity and design in business" (Department of Trade and Industry, 2005, p.iii). The DTI report provided the following definitions for creativity and *Design* in business (their emphasis):

> *Creativity is defined in this report as the production of new ideas that are fit for a particular business purpose.* This sees creativity as the first stage in innovation. Creativity has a role in enhancing all aspects of business performance – from the *Design* of new products and services to their production, marketing and distribution. It is not unusual to link creativity to certain industries such as film, music or design. But the challenge, as noted by the Chancellor, is 'not just to encourage creative industries, our priority is to encourage all industries to be creative'.
>
> *Design is a structured creative process. Design* is readily associated with industrial product design for manufactured products – specifically the 'look' of a product. However, the application of *Design* is much broader, for example designing for function; for aesthetic appeal; for ease of manufacture; for sustainability; and designing for reliability or quality and business processes themselves. Service *Design* affects how customers will experience the delivery of a service, such as a bank or a fast food restaurant. Elements of *Design*, particularly graphic *Design*, will form part of product, service and company branding and advertising strategy (Department of Trade and Industry, 2005, p.2).

In the DTI descriptions above, *Design* seems to be more comprehensive, but innovation is no longer a separate definition. Furthermore, the DTI provided simplified definitions for the public.

The *Global Innovation Index* ranks "the innovation performance of more than 130 economies around the world" (Dutta, Lanvin, & Wunsch-Vincent, 2020, p.xxi). The top three innovation economies, by income group, for 2020 were 1) Switzerland; 2) Sweden; 3) the United States.

Australia's innovation economy ranked at number 23 from the 130 indexed countries. Although the words *Design* and creativity are present in the report language, neither of the terms feature a specific focus area.

Moreover, most government statistics regarding the economic benefits of *Design* refer to the creative industries. Julier (2017) states that,

> the creative industries have become an important aspect of thinking and policy in political economy across the world, pan-national, national, regional and local scales (Julier, 2017, p.41).

There is also a substantial and ongoing debate about the different disciplines and aspects that constitute *Creative Industries* (Flew, 2014; Julier, 2017).

The *United Nations Conference on Trade and Development* (UNCTAD) identified four categories: *Heritage*, *Arts*, *Media* and *Functional creations* and nine industries to sit under the central banner of creative industries. All these categories contribute to the "creative economy" (Flew, 2014, p.124). Julier (2017) maintains that *Design* holds a unique position in the creative industries because of its relevance to all fields.

In 2015 and 2018, the British Design Council presented their first-ever reports to focus solely on the *Design Economy.* These reports were the first of its kind to recognise *Design's* contribution to the economy in its own right and not as part of the creative industries (Design Council, 2015; Design Council, 2018).

The 2015 Design Council report stated their results move *Design* from being just "one facet of the creative industries to being a creative practice that cuts across the UK economy" (Design Council, 2015, p.30).

The 2018 results for the *Design* industry showed that,

> 2014 and 2016, design industry turnover increased by 15.4% (compared to 1.1% for UK businesses over the same period) generating an additional £5.9 bn (Design Council, 2018, p.36).

Despite ground-breaking research into *Design's* economic value, public confusion about its meaning still exists (Moultrie, 2013). The following section reports on the different meanings of *Design* found in the literature.

2.3 Design Meaning

The meaning of the word 'Design' is much contested.
(Julier, 2008, p.40).

The *Oxford English Dictionary* (1933) states the word *Design* derived from the 14th-century word "desinner" to mean "designe, signifie, or shew by a marke or token, to designne, prescribe, appoint".

Merriam-Webster online dictionary notes this use of *Design* was a transitive verb: "to indicate with a distinctive mark, sign, or name." Design became a noun in 1565 to represent a "particular purpose or intention held in view by an individual or group" (Merriam-Webster, n.d.).

Terzidis (2007) traced the origins of *Design* to Greek ancestry, reasoning that (de)*sign* originated from the Latin verb *signare*, which references "mark, mark out, or sign" (p.69). Terzidis (2007) maintains that pre–Socratic philosophers, "Xenophanes, Parmenides or Zeno", meant *Design* when they claimed that "nothing comes out of nothing and disappears into nothing" (p.72). In other words, all *Design* has consequences.

Likewise, Flusser and Cullars (1995) argue that people are inclined to overlook *Design's* harmful characteristics. The manipulation of ideas to make them more acceptable to people is, they claim, a deceitful *Design* practice.

Heskett (2005), in his book, *Design: A Very Short Introduction*, said *Design* was like the word love. The meaning people give to 'love' changes "dependent upon whom is using it, to whom it is applied, and in what context" (p. xxiv). Similarly, the meaning of *Design* is dependent on who is using it and the context of its use.

The word *Design* is a noun, verb and occasionally an adjective (Julier, 2008; Ulrich, 2011b). The sentence, "*Design* is to *Design* a *Design* to produce a *Design*" illustrates the confusing meanings of *Design* (Hesket (2005, p.5). Deconstructing Hesket's sentence, it reads as:

> *Design* is [noun or, leading to *Design* a verb] to *Design* [to think about a process necessary to *Design*: verb] a *Design* [a blueprint, plan or concept of a *Design*: noun] to produce a *Design* [the manifested outcome: noun).

Julier (2008) claims *Design* is related to the "professionalization of its practice" (p.43) and its meaning has gone through three main phases:

The first phase was the Renaissance when *Design* was "purposes, aims and intentions" (Julier, 2008, p.42).

The second phase was in Britain during the 19th century when there was much debate about "the misleading parallel between the English word *Design* and the French word dessin" (p.42).

This discussion led British inventors, such as Sir Henry Cole, to replace *Design* with other terms such as "…industrial art, decorative art or applied art…" These changes allowed designers to enlist "the word art to lend further status to their activities" (Julier, 2008, p.42).

However, as *Design* became more aligned with art, it lost a perceived sense of influence. Through association with art, the meaning of *Design* became aesthetically aligned rather than as a creation in itself. The third phase was "retrieval of the word '*Design'* to separate it again from art" (Julier, 2008, p.42). Julier notes that the influence of people such as Henry Dreyfuss and others, who called themselves industrial designers, saw the word *Design* reintroduced in Britain. Thus, the next section examines definitions of *Design* found in the literature.

2.3.1 *Design Definitions*

In 1996 Herbert Simon proposed, "everyone *Designs* who devises courses of action aimed at changing existing situations into preferred ones" (Simon, 1996, p. 111). Simon's definition has been widely adopted over time and regularly cited in scholarly research.

However, approximately twenty years later, Margolin (1989) claimed that *Design* was difficult to translate into pragmatic terms. The *Design* disciplines needed a description that facilitated more collaborative understanding and any definition should include technology. Margolin, accordingly, called for any definition of *Design* to be focused towards a "liberal art of technical culture" (p. 5).

Similarly, Love (2002) maintained that a standard definition of *Design* was unlikely to materialise because *Design* professionals had to keep changing in keeping with global and technological advances.

Cross (1999) proposed that *Design* belonged in three main categories, a) *Design* and people, b) *Design* and processes and c) *Design* and products. Cross acknowledged that Simon's "rational problem solving" perspective and Schön's "reflective practice" view of *Design* were both highly influential in defining a meaning for *Design* (Cross, 1999, p. 10).

Friedman (2003) argues that *Design* is a 'service' because it is central to creating solutions for human needs. Ralph and Wand (2013), in *A Proposal for a Formal Definition of Design*, made it clear the debate was ongoing. They recommend a definition that decisively divides *Design* into a noun and then a verb. They argue, as a noun, *Design* is:

> A specification of an object, manifested by an agent, intended to accomplish goals, in a particular environment, using a set of primitive components, satisfying a set of requirements, subject to constraints (Ralph & Wand, 2013, p. 6).

As a verb, *Design* is:

> To create a *Design*, in an environment (where the designer operates) (Ralph & Wand, 2013, p. 6).

Daly (2008) studied how *Design* professionals 'experienced' *Design* and the results generated six categories of *Design* meanings.

Listed in hierarchal order, Daly defined *Design* as:

1. Decision-making: *Design* is making evidence-based decisions (Daly, 2008, p.73).
2. Translation: *Design* is taking an idea or problem and translating it into a working solution (Daly, 2008, p.85).
3. Synthesis: *Design* is a personal synthesis of previous experiences, similar tasks, technical knowledge, and others' contributions to achieving a goal. (Daly, 2008, p.85).
4. Progression: *Design* is dynamic intentional (p.92) progression toward something that can be developed and built upon in the future within a context broader than the immediate task (Daly, 2008, p.98).

5. Exploration: *Design* is a creative exploration with direction (p.98) to develop an outcome with value for others, guided by discoveries made during exploration with an evolving and flexible outcome (Daly, 2008, p.105).
6. Freedom: *Design* is the freedom to create any of an endless number of possible outcomes that have never existed within ambiguous, flexible, and fluid boundaries (Daly, 2008, p.105).

Buchanan (1992) maintained that no existing definition could adequately cover the considerable diversity of concepts and approaches that sit under the word *Design*. Nevertheless, a unified definition of *Design* would allow for comprehensive "cross-disciplinary ... research and theory making" (Love, 2002, p. 346).

In 2013, UK Member of Parliament Luff (All Party Parliamentary Design & Innovation Group, 2013) maintained that *Design* needed a more unmistakable voice. A definition was essential if the Government was to classify *Design*. Luff maintained it was up to the *Design* industries to provide this definition, but they may find the task done for them if they could not agree (All-Party Parliamentary Design & Innovation Group, 2013).

There has been little change to the situation over the last several years. *Design* is still not a united profession and consequently "is rarely backed by direct support from Government" (Policy Connect, 2020, para. 2).

The issue is not just finding a unifying definition for *Design*, but how and who should start the process. It could be that academic support for *Design* is a starting point for professional acceptance of *Design*.

2.3.2 *Design Education, Professionalism and the Enabled Amateur*

> *The main trouble with Design schools seems to be that they teach too much Design and not enough about the ecological, social, economic, and political environment in which Design takes place.*
> (Papanek, 1971, p.291).

Design is associated with a myriad of trades, industries and professions (Friedman, 2003). Overall, *Design* education has failed to support designers in their

relationship with management or the transfer of *Design* knowledge between different domains (Carvalho & Dong, 2008; Michlewski, 2008).

Fundamentally, a good working relationship between *Design* and business is essential because "the professional practice of design is an economic activity" (Friedman, 2012, p.139). It seems that *Design* education has remained insular when "skills for developing creative solutions to complex problems are increasingly essential" (Mayer and Norman, 2020, p.13).

However, it is also clear that, at present, significant changes are occurring in *Design* education. As Archer claimed, in 1979, *Design* has no boundaries, so it has no limits other than those manually defined (Archer, 1979). In 2012, Friedman classified areas "that one might expect to see in a strong, contemporary *Design* school" (p.143). Friedman argued that excellent *Design* education should provide skills across four domains (Friedman, 2012, p.145):

1. Science and Technology
2. Design
3. Art
4. Hermeneutics

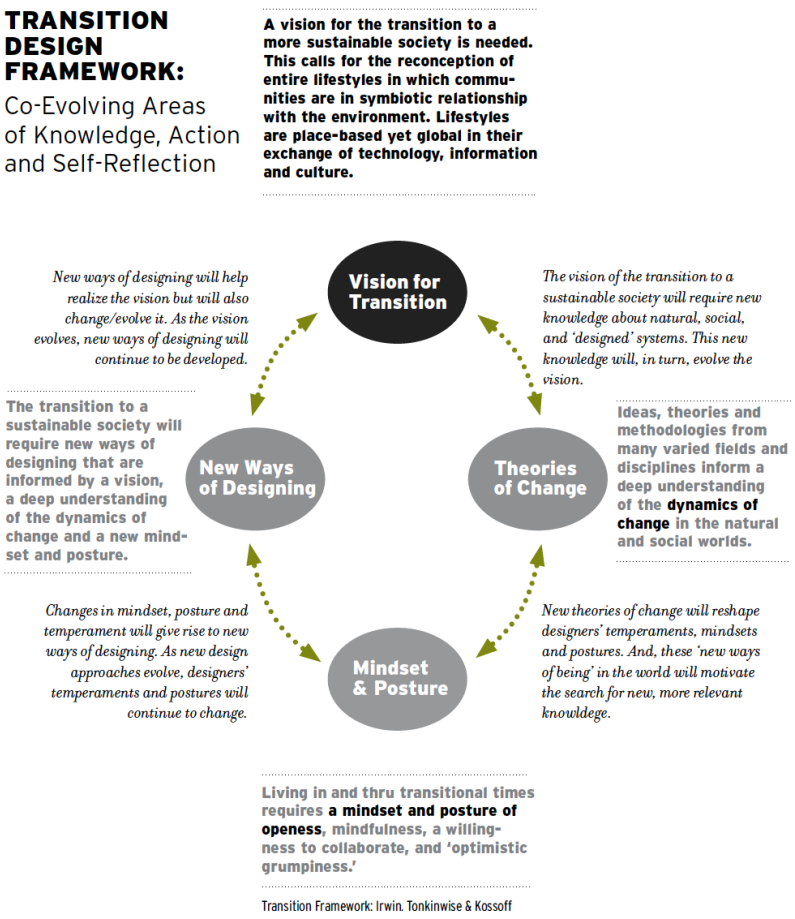
In 2015, Terry Irwin wrote about the *Design* curricula changes at The School of Design at Carnegie Mellon University. A central component of their new program was *Transition Design,* which Irwin explains integrates,

> *Design* practice, study, and research that advocates *Design-Led* societal transition toward more sustainable futures. Transition designers can come from all walks of life and use the tools and processes of *Design* to reconceive entire lifestyles as (policies, energy resources, transport, manufacturing, economy and food, healthcare, and education systems) (Irwin, 2015, p.98).

To date, *Transition Design* (Irwin, 2015) has established a substantial presence at *Carnegie Mellon University* and gained recognition in the literature (Baule & Caratti, 2016, Boyer, 2019; Irwin, 2018; Scupelli, 2015; Tonkinwise, 2020). Terry Irwin, Cameron Tonkinwise and Giddeon Kossoff created the *Transition Design* Framework shown in Figure 6.

Figure 6

Transition Design Framework (Irwin, 2015, p.99)



Irwin, T. (2015, January). Redesigning a design program: How Carnegie Mellon University is developing a design curriculum for the 21st century. *Solutions, 6*(1), 91-100. https://www.thesolutionsjournal.com/article/redesigning-a-design-program-how-carnegie-mellon-university-is-developing-a-design-curricula-for-the-21st-century/

The *Transition Design* framework emphasises four critical areas of human accomplishment and thought, "Vision, Theories of Change, Mindset/Posture, and New Ways of Designing" (Irwin, 2015, p.98).

Effectively, *Transition Design* supports *Human-centred Design* and *Design Thinking* in a unique model for activating social change. Irwin (2018) states that *Transition Design* is a method for confronting wicked problems in the community.

Another *Design* model, by Wrigley and Straker (2015), is the *Educational Design Ladder,* modelled after the *Danish Design Ladder.*

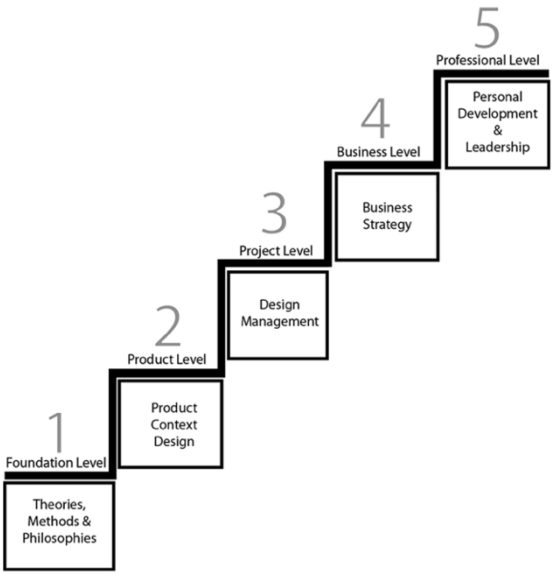
The *Danish Design Ladder* measures "*Design* activity in Danish businesses, based on their attitudes to *Design*" (p.375). The *Educational Design Ladder*, however, illustrates how education can apply *Design Thinking* concepts across different disciplines.

The graduating steps of the *Educational Design Ladder* infer maturing levels of *Design* development and five "pedagogical stages in the development of *Design Thinking*" (Wrigley & Straker, 2015, p. 379).

Figure 7 shows the *Educational Design Ladder* reproduced from Wrigley and Straker (2015, p.7) and its maturing stages of pedagogical development.

Figure 7

Educational Design Ladder Wrigley and Straker (2015, p.380)



Wrigley, C., & Straker, K. (2015). Design thinking pedagogy: the educational design ladder. *Innovations in Education and Teaching International, 54*(4), 374-385. https://doi.org/10.1080/14703297.2015.1108214

The *Educational Design Ladder* begins at the Foundational Level, where students learn the methodologies and philosophy of *Design Thinking.* The second step is the Product Level and the application of *Design Thinking*. The broader stages of *Design Thinking*, within a global context, are considered during the third Project Level stage.

The fourth Business Level incorporates *Design Thinking* and business strategy. The fifth, Professional Level, includes professional development, which "aims to develop a student's personal and professional skills" (Wrigley & Straker, 2015, p.380).

The changes occurring in *Design* education are also impacting "the relationship between amateur and professional design" (Beegan & Atkinson, 2008, p. 312). The term amateur usually refers to a practice that is not limited or confined by the demands of the marketplace.

Nevertheless, large numbers of non-*Design* professionals must create, produce and interact with *Design* every day. The literature shows that these enabled amateurs, referred to as citizen designers in the literature, are essential to successfully implementing inclusive problem-solving activities (Dicharry, 2018).

An example of citizen design is evident in the following story:

> In June 2005 Hilary Cottam was awarded the title 'Designer of the Year' by the Design Museum, London, for her work redesigning prisons, schools and healthcare services. The public, who had overwhelmingly voted for Cottam, knew that they had seen a good thing. The *Design* industry, however, was in an uproar. Cottam was not a trained or traditional designer of 'things'. Instead, she applied a *Design* approach to some of the UK's biggest problems: prisoner re-offending rates, failing secondary schools and the rising burden of chronic healthcare (Burns, Cottam, Vanstone & Winhall, 2006, p.6).

At the time, Cottam was the Director of *RED*, an initiative of the British Design Council. *RED* was an inter-disciplinary *Design-Led* team. It focused on *Transformative Design* for solving problems such as ill-health prevention, reducing crime and improving learning through *Design* innovation.

Transformative Design meant that Cottam worked with,

> designers... alongside policymakers – who use the *Design* process as a means of collaborating with pupils, teachers, patients, nurses, prisoners and prison officers to develop new solutions (Burns et al., 2006, p.6).

Admittedly, since 2006 the cross-disciplinary nature of *Design* has become more familiar to society as a whole. Cottom's result may not cause the same tumult amoung designers in 2021. Still, some professionals feel that if they assist non-*Design* trained individuals, they diminish the value of their formal *Design* education (Beegan and Atkinson, 2008).

It seems communication is at the heart of the issues between *Design* education, professionals and the enabled amateur. For instance, there are no defined boundaries between *Transformative Design* (Burns et al., 2006), *Transition Design* (Irwin, 2015) or *Design Thinking* in education (Wrigley & Straker, 2015).

There is extensive research that shows there is an opening for a new professional role (Bryant & Wrigley, 2014; Wrigley & Bucolo, 2012). This role is for a person who can "translate" the language of the *Design* professions with other business leaders and vice-versa. This new professional role calls for "transitional developers". Transitional developers are "translators, converting research from the *Design* field into the language of business" (Wrigley & Bucolo, 2012, p.6).

A case study on BMW by Bryant and Wrigley (2014) emphasised the need for this new role. They found "an inherent need for a transitional engineer to bridge the gap between *Design* and engineering" they labelled the role "designeer" (p. 77).

Muratovski (2016) also proposes that future generations of designers will focus more on "process creation" rather than "product creation" (p. 18). *Design* leaders will emerge from professionals who are "capable of working in a transdisciplinary mode" (p.20).

In this context, Wrigley (2016) proposes a "*Design-Led* framework" (DLI) to articulate, understand and implement *Design* in business. The DLI consists of "three integrated stages and ten sub-stages" (p.153).

The DLI asks business professionals a series of questions to support a meaningful *Design* and business relationship. Thus, the DLI supports *Design* and business communications.

Furthermore, Wrigley's *Design Innovation Catalyst Engagement Model* (Wrigley, 2016, p.162) is an experimental model for emerging professional designers. The term *Design Innovation Catalyst* means:

> Providing *Design* innovation knowledge to facilitate and assist business to remain relevant for the future by better understanding their customers and strategy" (Wrigley, 2016, p. 163).

Wrigley defines this future professional as a designer training to become a *Design* champion in business.

Although, Meyer and Norman (2020), authors of *Changing Design Education for the 21st Century,* claim a relevant *Design* education must borrow solutions from other professions such as medicine, law and business. However, the literature shows that the current changes to *Design* education towards a more transformative human experience may also impact medicine, law and business education.

The following sections seek to understand the meaning given to *Design* in cross-disciplinary situations. Section 2.4 and its sub-sections explain *Symbolic Interactionism's* theory, the premises behind the theory and the journal of *Symbolic Interaction*.

2.4 Symbolic Interactionism as a Theoretical Perspective

Given the polysemy of *Design,* the theory of *Symbolic Interactionism* provides a theoretical foundation for this study to help shed light on the meaning of *Design*. Littlejohn and Foss (2008) argue that an appropriate theory helps research focus on patterns and relationships in the information. The authors provide six steps for theory evaluation shown below (pp.26 – 28).

1. *Theoretical Scope*: asks whether the theory is inclusive?
2. *Appropriateness*: does the theory apply to the research questions etymologically, ontologically and axiologically?

3. *Heuristic Value*: determine how the theory will contribute to new knowledge.
4. Validity: establish how the theory will allow for observation and generalisation of relationships.
5. *Parsimony*: consider the logic and straightforwardness of applying the theory.
6. *Openness*: ascertain how well the theory opens up to other possibilities.

Overall, the theory of *Symbolic Interactionism* aligned appropriately with all six steps, but with varying degrees of application. The following sections and thesis chapters address these applications of *Symbolic Interactionism*.

Additionally, Littlejohn and Foss (2008) maintain that "you have a really good theory [when] you have an 'aha' reaction." Throughout this study, the researcher has felt *Symbolic Interactionism* was an excellent choice for shedding light on *Design* meaning in a professional setting— "an 'aha' reaction" (Littlejohn & Foss, 2008, p.28). Section 2.4.1 provides an explanatory overview of Symbolic Interactionism.

2.4.1 *What is Symbolic Interactionism?*

Symbolic Interactionism is a distinctly American sociological and theoretical perspective. At its peak in the 1920s it progressed to a stable theoretical position during the 1950s (Alvesson, & Sköldberg, 2009; Snow, 2001). *Symbolic Interactionism's* significant history and its principles have supported many areas of sociology. The theory has achieved wide recognition for producing "insightful accounts of human interaction in natural settings" (Huber, 1973, p. 274).

Fundamentally, the premises of *Symbolic Interactionism* show that, as individuals, we apply meanings to things. These meanings arise from our social interactions with other individuals in groups or societies. Furthermore, we modify this meaning of something due to our various encounters and experiences (Blumer, 1969; Fine & Tavory, 2019).

A benefit of the theory of S*ymbolic Interactionism* is the "linkages between society and individuals without denying the reality of either" (Burke, 2003, p.112).

Thus, the theory can shed light on how people give meaning to *Design* through their social interactions and encounters with *Design* (Carter & Fuller, 2016).

At present, *Symbolic Interactionism* is reworking its foundations to become more relevant to the social challenges that human beings face in the 21st century (Fine & Tavory, 2019).

2.4.2 *Background*

Symbolic Interactionism has origins in three schools of thought, George Herbert Mead and Herbert Blumer from the University of Chicago, Manford Kuhn from Iowa University and Sheldon Stryker from Indiana University (Carter & Fuller, 2016). Erving Goffman was also considered an influential person in *Symbolic Interactionism* (Carter & Fuller, 2016, p.939).

However, George Herbert Mead, influenced by the pragmatic philosophy of scholars such as John Dewey and Charles H. Cooley, is credited with progressing and raising the profile of *Symbolic Interactionism* in the early 20th century (Benzies & Allen, 2001).

Mead's work was published posthumously from student lecture notes and writings under the title *Mind, Self and Society: From the Standpoint of a Social Behaviorist* (Mead & Morris, 1934). In 2015, *Mind, Self, and Society: The Definitive Edition* included a special tribute to Mead. In the Foreword, Hans Joas observed that Mead's writings had been in print for more than 80 years. These many years alone signified their meaningful contribution to the development of social philosophy (George Herbert Mead, 2015).

However, the name *Symbolic Interactionism* did not apply until 1937. Herbert Blumer named the theory *Symbolic Interactionism*, in what he said was "an offhand way ... The term somehow caught on and is now in general use" (Blumer, 1969, p.1). Fine (1993) writes that,

> Herbert Blumer, his colleagues at the University of Chicago, and students elsewhere articulated the symbolic interactionist perspective and, in effect, policed the boundaries (Fine, 1993, p.63).

In 1969, Blumer published *Symbolic Interactionism: Perspective and Method*. The purpose of Blumer's book was to define the theory into "three simple premises" (p. 2). He aimed to enable the development of an "analytical scheme of human society and human conduct that is quite distinctive" (p.6).

Blumer's three premises have remained the 'voice' of *Symbolic Interactionism* for more than fifty years. In 2019, in the journal of *Symbolic Interaction*, Gary Alan Fine and Iddo Tavory published an *Editors Invitation* addressed to up-and-coming sociologists. Their essay proposed a change to Blumer's premises "to invigorate *Symbolic Interactionism*" for the 21st Century (Fine & Tavory, 2019, p.458). The premises, as defined by both Blumer (1969) and Fine and Tavory (2019), are listed in the following section.

2.4.3 *Premises of Symbolic Interactionism*

This section covers two groups of *Symbolic Interactionist* principles. The most widely known premises for *Symbolic Interactionism* are by Blumer (1969) and a revision of these by Fine and Tavory (2019) are the second group. The groups of premises are displayed side by side in Table 3.

Table 3

Symbolic Interactionism Blumer (1969), Fine and Tavory (2019)

	Blumer (1969, p.2)	Fine and Tavory (2019, p.458)
1	Human beings act toward things on the basis of the meanings that the things have for them.	People act upon meanings while participating in distinctive communities that, in turn, depend on shared meaning.
2	The meaning of such things is derived from, or arises out of, the social interaction that one has with one's fellows.	Meanings depend on continuing and self-reflexive interaction, as such interaction refracts actors' pasts, presents, and anticipated futures.
3	These meanings are handled in and modified through an interpretative process used by the person in dealing with the things he encounters.	Situations are linked in patterned ways. They change or further ossify as participants recognize this patterning and the structures that support these meanings.

By the 1960s, sociology had adopted many of the core concepts of *Symbolic Interactionism*. The premises that had once seemed so radical were now fundamental to other theories (Fine, 1993; Frey, 2004).

Nevertheless, Blumer's (1969) premises have united *Symbolic Interactionism* for more than fifty years (Fine & Tavory, 2019).

Fine and Tavory (2019) pay homage to Blumer while at the same time suggesting that the current world has changed and "situations gain power because they build on and depend on other situations ... [and it is a world] bringing nonhuman actors into the shaping of meaning" (Fine & Tavory, 2019, p. 458)

Fine and Tavory (2019), argue that Blumer's premises focus too much on the individual's viewpoint. There need to be new perspectives that "better examine the impact of relations and institutions" (p.458). Thus, Fine and Tavory (2019) propose three revised premises to infuse interactionism with "new vitality" for the 21st century (p. 458).

At the time of writing, it was too soon to know how the newer premises by Fine and Tavory (2019) would change future *Symbolic Interactionist* studies. However, this thesis integrates both sets of premises.

The following section provides more in-depth descriptions for each of the premises supplied by Blumer (1969) and Fine and Tavory (2019). Blumer described the additional information as "root images" (Blumer, 1969, p.6), while Fine and Tavory (2019) call them "core concepts" (p. 459).

2.4.4 *Root Images and Core Concepts of Symbolic Interactionism*

Blumer (1969) proposed six 'root images', as he preferred to call them, to establish a *Symbolic Interactionist* methodological "framework of study and analysis" (p.6). Blumer's (1969) root images are more in-depth reflections on the three main premises of *Symbolic Interactionism*. Two root images respond to one assumption.

Similarly, Fine and Tavory (2019) name their root images, core concepts, and they are more profound reflections of their three *Symbolic Interactionist* premises.

Blumer's (1969) six 'root images' and the related six 'core concepts' of Fine and Tavory (2019) are presented side by side in Table 4, followed by a brief discussion.

Table 4

Symbolic Interactionism: Root Images and Core Concepts

	Blumer (1969) Root Images	Fine and Tavory (2019) Core Concepts
1	Human groups or societies	Affordances
2	Social interaction	Situational webs
3	Objects	Group commitment
4	The human being as an actor	Embeddedness
5	Human action	Disruption
6	Interconnection in the lines of action	Oppression and privileges

The first of Blumer's (1969) six root images refers to *Human groups or societies*. The consequences of "what people do" becomes our culture (p.6). Our social structure is human behaviour resulting from our relationships with "social position, status, role, authority, and prestige" (p.7). According to Blumer, this first root image becomes the starting point for establishing a *Symbolic Interactionist* perspective.

The first core concept for Fine and Tavory (2019) is *Affordances* (p.460). They claim *Affordances* extends the evaluation opportunities of Blumer's first root image. Fine and Tavory (2019) argue that individual and group interaction must include "the power of structure" without forgetting that "both space and time channel action" (p.460).

Blumer's (1969) second root image, *Social interaction*, identifies two types of human interaction. 1) *non-symbolic interaction* occurs when people respond with instinctive reactions to the meaning of something. We do not question anything. We react. 2) *symbolic interaction* is when people engage in "interpretation" (p.8). Thus, people respond to the meaning of something based on what it means to them. As people interpret things differently, our meaning of something can be different.

Fine and Tavory (2019) named their second core concept, *Situational webs*. They argue that interactions within situations reflect other situations. In other words, every social setting connects to another setting like a spider's web. Therefore, the meanings of things are impacted by these interconnecting situations, as are the thoughts occurring between these situations.

Blumer's (1969) third root image he called the nature of *Objects*. These are the things that make up our world.

"An object is anything that can be… referred to – a cloud, a book…a religious doctrine…" (p.10). These things can be material, such as a house or shoe; social elements, such as a friend; or abstract things such as values or personal principles. As Blumer notes, the object's meaning is individual and "may have a different meaning for different individuals" (p.11). Blumer argued that human beings only comprehend the things in their world, "people may be living side by side yet be living in different worlds" (p.11).

The third core concept for Fine and Tavory (2019) is *Group commitment*. Fine and Tavory (2019) reason that there are different levels of analysis. They extend *Symbolic Interactionism* beyond "microlevel analysis" to include "mesolevel analysis" (p.461). Fine and Tavory (2019) argue that for "contemporary interactionism", smaller groups should be treated as "the grounding for an expansive social order" (p.462).

Blumer's (1969) fourth root image, *The human being as an actor*. This root image explains the meaning of objects and how we, as humans, view ourselves. Our meaning is "formed, learned, and transmitted through a … social process" (p.12). Blumer refers to the "self-object" in which we give ourselves labels, [I am] "young in age, a student, in debt, trying to become a doctor..." (p.12). We also form a view of ourselves through "role-playing" and how others see us (p.13).

The fourth core concept for Fine and Tavory (2019) was *Embeddedness*. This concept focused on the actions within group culture and the actions that exist "in light" of group cultures and constraints (p.462).

Blumer's (1969) fifth root image is *Human action.* Blumer maintained that it was essential to understand how we mentally process social exchanges and arrive at something's meaning as it affects our actions.

Fine and Tavory (2019) refer to the fifth core concept as *Disruption*. They claim that *Disruption* considers group relationships and the ability to "transcend past expectations" (p.464).

In the sixth root image*, Interconnection in the lines of action*, Blumer (1969) refers to "joint action" in group life (p.17). Blumer claims that individuals participate in social practice that supports the rules, not the other way around. Blumer also notes that any form of joint action must align with what went before, its history.

The sixth core concept for Fine and Tavory (2019) is *Oppression and privileges*. Fine and Tavory (2019) believe that questions about "inequality and privilege" expand *Symbolic Interactionism* and allow for the emergence of newer theoretical developments.

Blumer's (1969) original premises were the theoretical foundation for this thesis. However, this research also considers the *Symbolic Interactionist* perspectives provided by Fine and Tavory (2019).

2.4.5 *Controversy, Challenges and Criticism*

An early criticism of *Symbolic Interactionism* was the difficulty researchers had to systematically articulate the theory because there were no clear-cut procedures or techniques for enhancing research (Kuhn, 1964).

Blumer (1969) refuted the criticisms because he claimed, *Symbolic Interactionism* was a philosophical approach to a direct examination of the empirical social world, not a method. Blumer did, however, include the six 'root images' discussed previously to support a framework for the theory (Benzies & Allen, 2001; Blumer, 1969, p.6).

Other reproaches claimed Blumer's premises did not capture the full empirical depth of Mead and Morris (1934) and others who developed the theory (Atkinson & Housley, 2003). More than thirty years on, Snow (2001) claimed they are merely a useful introduction to the theory. There have also been reports that the theory was dying or did not provide enough scope to view a changing world (Atkinson & Housley, 2003; Snow, 2001).

Another area of disquiet and debate in *Symbolic Interactionism* is whether studies should use qualitative or quantitative methods. Blumer (1969), in particular, had strong views against statistical (quantitative) methods. Although, the qualitative tradition, promoted by *Symbolic Interactionism*, was in direct contrast to the scientific and structured research that was dominant at the time (Blumer, 1969; Fine, 1993).

Over time, many academics have challenged the *Symbolic Interactionist* association with qualitative only research (Mackenzie & Knipe, 2006; Ulmer & Wilson, 2003).

Schwandt (1998) speculated that the cause for the challenge was the "many theoretical and methodological variants of the position" (p.233).

In 2001, Benzies and Allen published *Symbolic interactionism as a theoretical perspective for multiple method research.* The authors' purpose was to "expand the dialogue about new methodologies" (p. 541).

Despite criticisms, Atkinson and Housley (2003) contend that *Symbolic Interactionism* has survived *because* its boundaries were expandable.

Fine and Tavory (2019) recognised that many past yet significant contributions by *Symbolic Interactionism* had become "self-evidently true" or "too often considered mundane" (p. 459). Thus, the authors proposed their revised *core concepts* to revitalise *Symbolic Interactionism* for the 21st century (see 2.4.4).

The following section reviews the journal *Symbolic Interaction* and its association with *Design.*

2.4.6 *Journal of Symbolic Interaction*

Symbolic Interaction is the principal journal publication for the Society for the Study of Symbolic Interaction (SSSI). The journal publishes work that focuses on the interactionist perspective and encourages interdisciplinary research contributions (Symbolic Interaction, n.d.).

The first issue of *Symbolic Interaction* appeared in 1977 with one volume for 1977 and 1978 and two volumes per year between 1979 and 1990. The journal has published four times a year since 1991. Each volume contains approximately 14 items, including book reviews and original research.

Research published in *Symbolic Interaction* is not generally associated with the *Design* professions. A cursory review of article titles, abstracts and keywords from 1999 to 2020 found some limited references to *Design*. However, there is no evidence to suggest that *Symbolic Interaction* is not open to publishing *Design* related research. The concern could be whether, once published, it would reach a wide enough *Design* audience.

Nevertheless, studies of *Design* do use *Symbolic Interactionism* as a theoretical foundation (Barnett, 2005; Daly, 2008; Terrey, 2012).

For example, Barnett (2005) used *Symbolic Interactionism* to examine organisational change and how the meaning professionals assigned to a situation affected their behaviour.

Daly (2008) did not name *Symbolic Interactionism* directly but investigated professionals understanding of *Design* using a phenomenologically informed interactive perspective. Terrey (2012) used *Symbolic Interactionism* to study the meaning of *Human-centred Design* in a large government organisation.

In 2008, Charmaz argued that articles written for the journal *Symbolic Interaction* must play their part in "re-examining and re-affirming… understanding for the new century" (Charmaz, 2008, p. 51). Ostensibly, Fine and Tavory (2019) responded to these calls in a 'letter' addressed to Young Sociologists called *Interactionism in the Twenty-First Century: A Letter on Being-in-a-Meaningful World.* The following section (2.5) examines the relationship between the principles of *Symbolic Interactionism* and *Design* and business.

2.5 Design, Business and Symbolic Interactionism

> *The identity and the functioning of each individual organization are largely dependent on the language it possesses, and this language must inevitably be considered in any process of organizational development.*
> (Cossette, 1998, p.1373).

The focus of this thesis was on the meaning of *Design* in the professional workplace. In particular, the aim was to shed light on the communication breakdowns known to occur between professionals in *Design* and professionals in business.

Generally, breakdowns in communication happen when the meaning of a word is ambiguous and it is interpreted differently from the way it was intended (Conklin, 2005; Hulett, Pt II, 1966). Although Hulett (1966) maintains that it is the individual's responsibility to ensure, they understand.

Cossette (1998) is the author of one of few *Symbolic Interactionist* studies on "language in organisations" (p.1355). Cossette claimed, business language resulted from individuals interacting within a situation. Furthermore, Cossette (1998) maintains that the value an organisation places on its company language is also the foundation of its structure and functions.

Herein lies the dilemma. If the company language does not recognise *Design*, everyone in the business will have their *Design attitude.*

A *Design attitude* is the personal beliefs and emphases one brings to *Design* and a business meeting. In their book *Managing by Design*, Boland and Collopy (2004) argue that all people have a *Design attitude.* Furthermore, a *Design attitude* is affected by the symbolic "and inherently metaphorical and ambiguous nature of words" (Boland, 2004, p.107).

Cossette (1998) states, "managers devote 57% to 89% of their time to verbal communication" (p.1355). Thus, communication or interaction with others is a primary management task.

Boland and Copley (2004) reason that, because management does not understand *Design* language, they avoid it. Therefore, *Design* has become marginalised in the workplace. In response to the communication challenges between *Design* and business professionals, Boland and Collopy (2004) created *An Initial Design Vocabulary for Management*. The authors claim,

> our language is crucial in constructing the situations we face, the ways we deal with them, and the kinds of solutions we can expect to achieve. In short, language matters (p.265).

Cossette (1998), in the *Model for understanding language from a symbolic interactionist stance,* presents multiple considerations that can impact communication between two people.

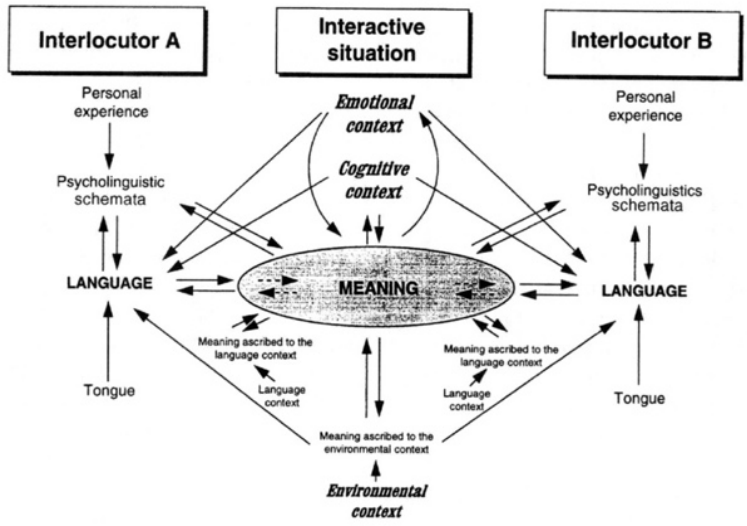
Cossette names two people in the model as *Interlocutor A* and *Interlocutor B,* who interact at a work meeting. These two people not only bring their personal experiences to the meeting but their "tongue." Cosette claims "tongue" represents the "grammatical rules that the actors use to visualise reality and communicate" (p.1364).

Therefore, the communication differences between native and non-native speakers must be an additional consideration to the emotional and cognitive contexts that each person also brings to the meeting.

Figure 8 shows Cossette's (1998) *Model for understanding language from a symbolic interactionist stance* (p.1363), which illustrates two individuals' interacting in the workplace.

Figure 8

Language and Symbolic Interactionism (Cossette,1998, p.1363)



Cossette, P. (1998). The study of language in organizations: A symbolic interactionist stance. *Human Relations, 51*(11), 1355-1377. https://doi.org/10.1177/001872679805101102

Essentially, from a *Symbolic Interactionist* perspective, a person communicates in business with words:

- The meanings of these words have emerged from the person's understanding of things.
- The person's social experiences impact the meanings they give to things.
- Communication in the workplace is affected by the grammatical rules of a first language, knowledge of the situation, the person's emotional state, and perceptions or expectations.

The amount of common ground between the interacting individuals will ultimately determine the meaning of words and whether there is shared understanding (Boland & Collopy, 2004; Blumer, 1969; Cossette, 1998; Mackenzie, 2002).

Thus, as Cossette (1998) demonstrates, "in a symbolic Interactionist stance, the pursuit of meaning is ultimately a highly individual process, even if it leads to consensus" (p.1367).

In 1966 J. Edward Hulett, Jr. published a two-part paper on *A Symbolic Interactionist Model of Human Communication.* Hulett's model focused on the individual communication processes that occur anywhere, not just in the workplace. He used *Symbolic Interactionism* because he felt "communication needed a fresh approach" (Hulett Jr., 1966, Part one, p.6). Hulett claimed, the advantages of such a model were the multi-layers of interaction it could accommodate, compared to the single-layer models of the time.

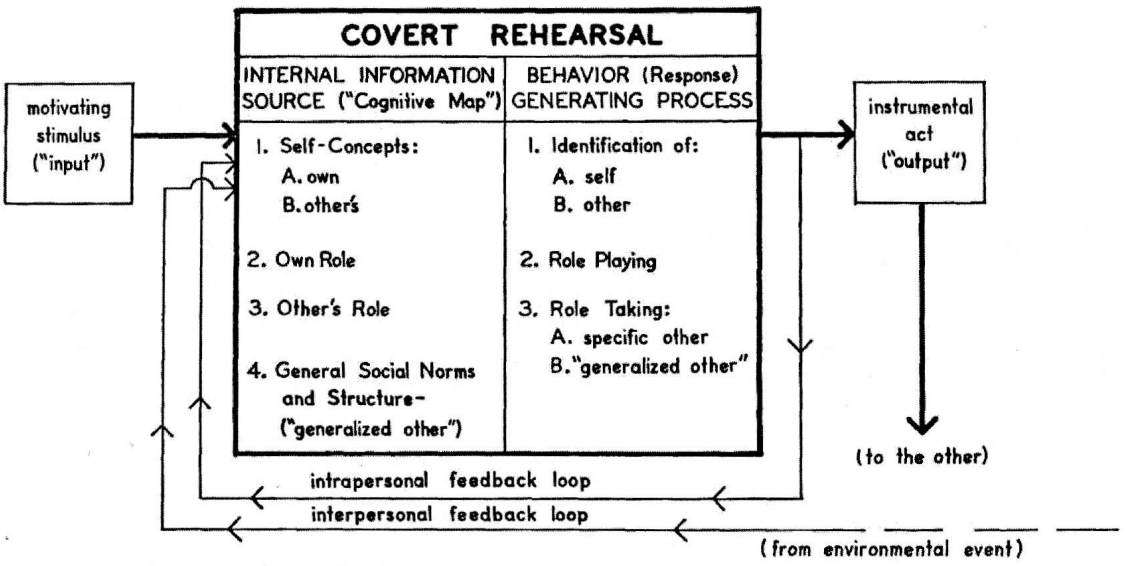
In particular, Hulett (1966, Part one) named the communication one has with oneself "covert rehearsal". Further, Hulett upheld that a Symbolic Interactionist communication involved an "instigation-action sequence", made up of five phases: "motivating stimulus, covert rehearsal, instrumental act, environmental event, and goal response" (Hulett, 1966, Part one, p.13).

Furthermore, Hulett claimed, a covert rehearsal was the heart of the communication process and consequently required its own space in the model. However, because human beings do not act and think simultaneously, this was an interpretative process a person engages in to determine their meaning of something.

Figure 9 is a reproduction of Hulett's (1966, Part one) model for a "covert rehearsal" (p.18). The model shows the back and forth cognitive thinking of two people interacting, as well as taking into account the environment of their interaction.

Figure 9

Model of Human Communication (Hulett, 1966, Part one, p. 18)



Hulett, J. E. Jr. (1966). A symbolic interactionist model of human communication: Part one: The general model of social behavior; The message-generating process. *AV Communication Review, 14*(1). 5-33. https://www.jstor.org/stable/30217278

Cossette (1998) and Hulett (1966) communication models are both based on *Symbolic Interactionist* premises.

Cosette's (1998) model focuses on language interaction from a 'bird's eye view'. Hulette's (1966) model focuses on the phases that impact a person's thinking, their resulting actions and the responses they receive or give to the other.

In both models, the premises of *Symbolic Interactionism* are primary considerations. The underlying goal is shared understanding of language. The following section looks at the importance of having a shared meaning or a shared understanding relative to *Design*.

2.5.1 *Towards Shared Understanding of Design*

The *Symbolic Interactionist* models of Cossette (1998) and Hulett (1966) and the *Design* vocabulary of Boland & Collopy (2004) are in accord. The more common understanding people have during an interaction, the more chance they can reach an agreement, such as a shared understanding of *Design*.

Furthermore, people are less likely to resist change if they have this shared understanding (Barnett, 2005).

Dr Jeff Conklin is the Director of the CogNexis Institute, a company "Dedicated to Building Shared Understanding of Wicked Problems" (CogNexus Institute, n.d.).

In an interview with Christensen (2009), Conklin claimed:

> The best way to grasp shared understanding is to consider what happens when it is missing. If you think about where teams or projects have failed, you often realize that what was missing was a shared understanding about what the process was going to be, or what the fundamental problem was to begin with, or the dimensions of the problem (Christensen, 2009, p.18).

It seems 'how' to ask the 'right' questions are also significant considerations for shared understanding. A pioneer in creative thinking, American Professor John Arnold, taught a course at Stanford University called *How to Ask a Question.* According to Vassallo (2017), Arnold believed that every time human beings made advancements, it was in response to a question, therefore,

> knowing what questions to ask and how to ask them is sometimes more important than the eventual answers (Vassallo, 2017, p.24).

Over many years, Professor Cara Wrigley has conducted extensive research into the implementation of *Design* and innovation procedures within organisations. Wrigley is a leader in the area of *Design-Led* innovation. Wrigley (2017) proposes that "visualisation methods" can promote shared understanding between people using "different terminology". In particular, Wrigley argues that by limiting specific dialogue, there is less likelihood of people being "excluded in the process due to semantic connotations" (p.245). Thus, visual illustrations bridge language barriers and connect people who have different meanings for *Design*.

A shared understanding of *Design* means there is a consensus on its meaning. Whereas, at present, it seems the meaning of *Design* is individual (Cosset, 1998). While shared understanding of *Design* is desirable (Conklin, 2005; Christensen, 2009, Wrigley, 2017), there is no consensus on the best way to achieve it.

Moreover, an understanding of the *Design* attitudes of professionals in *Design* and professionals in business, at the very least, could lead to shared understanding and increased competitive advantage for business (Boland & Collopy, 2004). A shared understanding of *Human-centred Design* could improve how we live (Cossette, 1998; Hulett, Part I, 1966).

2.6 Gap in the Literature

This chapter reviewed literature around the positive contributions of *Design* to the economy (Design Council, 2012; Rae, 2014; Jervis & Brand, 2014). The literature featured the contentious issues that affect a *Design* and business relationship (Boland & Collopy, 2004; Hulett, Part I, 1966; Martin, 2007; Nussbaum, 2007; Rae, 2014). It provided an overview of the history of *Design* (Buchanan, 1995; Julier, 2008) and *Design's* relationship to wicked problems (Rittel & Webber, 1973; Buchanan, 1992), *Human-centred Design* and *Design Thinking* (Brown, 2008).

The chapter presented literature that connected *Design* to the Fourth Industrial Revolution (Schwab, 2017). It reviewed research related to governments' implementation of *Design* to promote economic advantages through *Design* policy (Mortati, 2017). The literature also included *Design's* relationship with creativity and innovation (HM Treasury, Cox Review, 2005; Dutta et al., 2020).

There was a review of *Design* from its etymology (Flusser & Cullars, 1995; Terzidis, 2007) to definitions (Margolin, 1989; Simon, 1996; Ralph & Wand, 2009), as well as *Design's* meaning in society (Heskett, 2005) and higher education (Archer, 1979; Carvallo & Dong, 2008, Irwin, 2015).

Finally, the literature examined the theory of *Symbolic Interactionism* (Mead & Morris, 1934; Blumer, 1969; Fine & Tavory, 2019) and its suitability as a theoretical lens for *Design* and business communication (Cossette, 1998; Daly, 2008; Hulett, Jr.,1966, Part one; Part two; Smith 2005; Terrey, 2012).

However, there is a gap in the literature that studies the meaning professionals give to *Design* in the workplace (Wrigley & Bucolo, 2012; Smith, 2005). Furthermore, there are limited studies that view *Design* meaning through the lens of *Symbolic Interactionism* (Terrey, 2012).

As noted by Moore (2002), the first step in bridging any gap or chasm is identifying the problem. In other words, for this research, identifying the different meanings given to *Design* by *Design* and business professionals is likely the first step in closing their communication gap. Daly (2008) found that individuals with an awareness of *Design* had an improved *Design-related* experience.

Therefore, guided by the research questions, this study will use the theory of *Symbolic Interactionism* to investigate how professionals in *Design* and business communicate their meaning of *Design.*

2.7 Research Questions

The focus of this thesis was on the meaning of *Design* in the professional workplace. The aim was to shed light on the communication breakdowns known to occur between professionals in business and professionals in *Design*. The purpose was to extend existing *Symbolic Interactionist* communication models (Cossette, 1998; Hulett, Jr., 1996) to create a *Symbolic Interactionist* model for *Design*. Such a model could enable professionals to arrive at a shared understanding of *Design* regardless of their field of expertise or type of organisation.

The main research question underpinning this thesis is:

1. How do professionals in *Design* and professionals in business communicate the meaning of *Design*?

The research *Design* consisted of three studies. All three studies contributed to answering the research question and three sub-questions.

a) Study One: What meaning do people give to *Design* in professional settings?

b) Study Two: How do professional publications and their authors communicate a view of *Design* through their writing?

c) Study Three: How do businesses use the term *Design* in their online job ads?

The theory of *Symbolic Interactionism* guided this research by aligning the premises of the theory, outlined by Blumer (1969) and Fine and Tavory (2019), with the studies' results and their related questions. The following chapter outlines the methods used to answer the research questions.

Chapter 3: **Methods**

Chapter three describes the methods used to achieve the aims and objectives of this research. The purpose is to shed light on the challenges experienced in everyday communication between professionals in business and professionals in design.

Section 3.1 discusses the philosophical perspective of pragmatism and the theory of *Symbolic Interactionism* and how these views relate to a mixed method approach. 3.2 describes an evaluation of the methods used by other researchers who have studied the meaning of design.

Section 3.3 examines qualitative and quantitative assumptions and how to mix the data in a mixed method study. 3.4 defines and debates content analysis as a suitable analytical method in mixed method research *Design*. 3.5 chooses a systematic approach and discusses the integration of the analytical options. 3.6 presents the research *Design* used in this thesis.

Three methods were selected to examine how professionals in *Design* and industry communicate their meaning of *Design* across different contexts to answer the research questions outlined in Section 2.7.

3.1 Philosophical Perspective

The establishment of a philosophical perspective enables the researcher to determine appropriate methods for their research, supporting efficient collection and analysis of the data (Birks & Mills, 2011). A *philosophical view* is an umbrella under which the theoretical perspective sits.

Two philosophical perspectives cover the theory of *Symbolic Interactionism*. These are *constructionism* (Terrey, 2012) and *pragmatism* (Denzin, 1992; Ulmer & Wilson, 2003).

Charles Sanders Pierce (1839-1914), the renowned philosopher and logician, is called the forefather of *pragmatism*. Pierce and other well-known scholars such as William James and John Dewey upheld *pragmatism* as an idea, concept, theory or

model. It was a real-world method that had some sort of visible effect (Campell, 2011).

Denzin (1992) maintains the principles of *Symbolic Interactionism* originated from the basis of "What is true is what works, what can be verified, and what satisfies" (p. 6).

This research selected *pragmatism* as the philosophical guide for *Symbolic Interactionism*. *Pragmatism* encourages the researcher to cultivate both objective and subjective understanding and, therefore, supports a wide range of methods (Creswell, 2014).

As the theory of *Symbolic Interactionism* underpins this research, the researcher examined the multiple approaches of *pragmatism* and mixed methods to see how they aligned with the premises of *Symbolic Interactionism*. Table 5, based on Creswell (2014, p. 11), shows the premises of *Symbolic Interactionism* aligned with *pragmatism* and mixed methods.

Table 5

Pragmatism, Symbolic Interactionism and Mixed Methods

Pragmatism (Creswell, 2014)	**Symbolic Interactionism**	**Mixed Methods (Creswell, 2014)**
The pragmatist approach supports multiple systems of philosophy and experience.	Humans act towards things on the basis of the meanings they ascribe to those things (Blumer,1969, p.2 People act upon meanings while participating in distinctive communities that, in turn, depend on shared meaning (Fine & Tavory, 2019, p.458).).	Researchers are not limited to one perspective. They can choose from both qualitative and quantitative assumptions.
A researcher is free to choose the most appropriate methods, techniques and procedures for their study.		With mixed methods, the researcher can choose both quantitative and qualitative methods, which provides more opportunities for deeper understanding of the research issue.
Pragmatists agree that inquiry occurs in shared social settings, social history and other contexts.	The meaning of such things is derived from, or arises out of, the social interaction that one has with others and the society (Blumer,1969, p.2). Meanings depend on continuing and self-reflexive interactions,	The pragmatist view supports the use of a theoretical lens to reflect and provide better understanding of social and other contexts.

Pragmatism (Creswell, 2014)	Symbolic Interactionism	Mixed Methods (Creswell, 2014)
	as such interactions refracts actors' pasts, present, and anticipated futures (Fine & Tavory, 2019, p.458).	
Pragmatists acknowledge that 'truth' is the best understanding we have at the time.		Mixed methods provide opportunities to assess multiple 'truths' to gain further understanding.
Pragmatist researchers establish their intentions and investigate "what" and "how" to research.		The researcher should establish the 'purpose' and 'rationale' for using mixed methods prior to the start of the study.
Pragmatists accept that the world is not in absolute unity.	The meanings are handled in, and modified through, an interpretative process used by the person in dealing with the things he/she encounters (Blumer,1969, p.2). Situations are linked in patterned ways. They change or further ossify as participants recognize this patterning and the structures that support meanings (Fine & Tavory, 2019, p.458).	Mixed methods allow the researcher to utilise more than one way to research an issue.

The premises of *Symbolic Interactionism* and their alignment with *pragmatism* and mixed methods.

3.2 A Methods Review

An initial review of five PhD and three Master-level studies provided insights into how other studies have applied theoretical foundations and methodology to an interactionist perspective. In particular, there is academic support for *Symbolic Interactionism* as a perspective for multiple method research (Benzies & Allen, 2001; Fine, 1993). The following information discusses only the five PhD studies, their interactionist approach and their association with *Design* and or business.

Table 6 presents a summary of the five PhD studies reviewed. Table columns display the authors' name, the thesis title, the theoretical perspective underpinning their study, the methods and sample size of the studies and this researcher's comments below each section.

Table 6

Review of Five PhD Publications

Author	Title	Theoretical Perspective	Methods
Barnett, K. (2005).	*Creating Meaning in Organizational Change: A case in Higher Education.*	*Symbolic Interactionism*.	Snowball Sampling. *N*=20 interviews. Two accounts of passive observations. Textual analysis of *N*=15 texts.
Barnett (2005), categorised meanings from stakeholders' interactions and their effects on behaviour during a change in organisations. The findings show that multiple levels of power affected how organizations create, understand, and sustain meaning during organisational change.			
Daly, S., R. (2008)	*Design Across Disciplines*	Phenomenologically informed interactive perspective, ties to Variation Theory.	In depth, semi-structured Interviews *N*=20 with design professionals from different design disciplines.
Daly (2008) investigated the understanding of *Design* based on interviews with *Design* professionals from different disciplines with a focus on their *Design* experiences, reflections and meanings of *Design*. Original perspective grounded in engineering.			
Sleeswijk Visser, F. (2009).	*Bringing the everyday life of people into design*	Grounded Theory. Explorative, Designerly-driven, systematically structured approach based on an action-reflection process.	Case Studies. *n*=8: *n*= 3 with students, *n*=3 in collaboration with practice, *n*=2 embedded in practice.
Sleeswijk Visser (2009), used context mapping as a communication plan for interaction *Design*. The research investigated the communication experience and relationships that roles played in the *Design* process.			
Smith, G. (2005).	*Misunderstood and Mysterious: How Design and Designers are Perceived by Design Professionals, Design Educators and the Public*	Phenomenologically Informed Interactive Approach to the Study of *Design*.	Mixed method. Three studies. a) Occupational Prestige Scale Questionnaire to three participant groups n=91, n=125, & n=88. b) Two focus group interviews: total n=6. c) Self-report questionnaire n=753.
Smith (2005) undertook the first large-scale global survey on perceptions of *Design*. Smith studied the relationship between *Design* and occupational prestige, the professional status of designers, including income, gender and education.			
Terrey, N. (2012).	*Managing by Design – A Case Study of the Australian Taxation Office*	*Symbolic Interactionism*: using Grounded Theory, Situational Analysis and Actor Network Theory.	Case Study of ATO: Exploratory interviews, Auto-ethnographic accounts, organisational artefact analysis.
Terrey (2012), studied the meaning of *Human–centred design* in a large organisation (ATO) and the perceived value of *Design* to managers and employees.			

The word *Design* was mentioned explicitly in four of the five thesis titles (Daly, 2008; Sleeswijk Visser, 2009; Smith, 2005; Terrey, 2012).

Barnett (2005) used Symbolic Interactionism to examine *"*meaning during the change process" in organisations (p.v.). Daly (2008) and Smith (2005) both employed a phenomenologically informed interactive analysis. Although, Daly (2005) also included ties to Variation theory. Terrey (2012) combined *Symbolic Interactionism*, Grounded Theory and Actor-Network Theory, while Sleeswijk Visser (2009) used Grounded Theory.

Three of the five studies, Barnett (2005), Daly (2008) and Terry (2012), stated that interviews provided a significant source of in-depth information.

Barnett (2005) and Daly (2008) conducted *N=20* interviews using Snowball or Convenience sampling.

Sleeswijk Visser (2009) and Terrey (2012) utilised case studies and action-reflection processes with situational analysis.

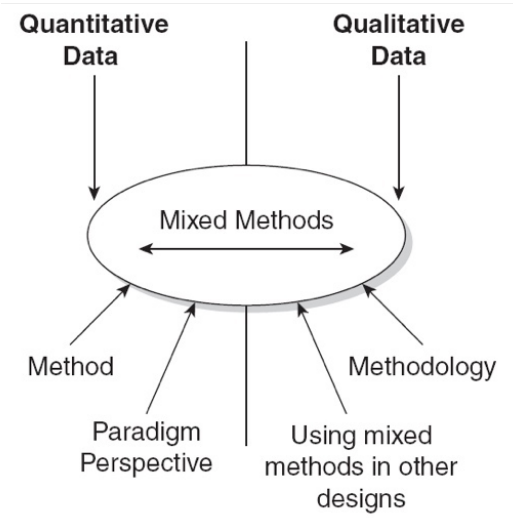
Whereas Smith (2005) claimed her research was "the first large-scale survey that looks specifically at perceptions of design and designers either in Australia or internationally" (p.93). Furthermore, Smith (2005) was the only study that implemented mixed methods. Qualitative procedures were the dominant methodological approach in all five theses. Smith (2005) and Terrey (2012) also triangulated their data to warrant the trustworthiness of their results.

None of the five studies provided specific analytical steps to allow replication.

Although the boundaries between quantitative and qualitative methods are not binding, most research is inclined to veer towards one way or the other (Creswell, 2014). However, for mixed methods, if qualitative and quantitative approaches sit "either end of a continuum", mixed-method research lies in the middle (Creswell, 2014, p.3). See Figure 10.

Figure 10

Mixed Methods Research (Creswell, 2010, p.51)



Creswell, J. (2010). Mapping the developing landscape of mixed methods research. In A. Tashakkori., & C. Teddlie (Eds.). *SAGE Handbook of Mixed Methods in Social & Behavioral Research* (2nd ed, pp. 45-68). SAGE. https://dx.doi.org/10.4135/9781506335193.n2

Mixed methods allow the researcher to employ both inductive and deductive reasoning while choosing from a wide range of tried and tested, quantitative and qualitative, methods. Furthermore, mixed methods provide additional opportunities for interpretation of the research issue (Creswell, 2014), which in turn leads to,

> richness of understanding of phenomena through confirmation of result, extension of knowledge or by initiating new perspectives about the subject of research (Wright & Losekoot, 2012, p. 417).

Critics of mixed methods believe it is not advisable to attempt quantification of qualitative data. In contrast, scholars argue this is only an issue relative to the small sample sizes often found in qualitative studies. Larger sample sizes mean that qualitative data can be analysed using quantitative methods. In the same way, qualitative descriptions help tell stories about statistics.

The use of mixed methods is growing and becoming more prevalent as researchers seek a broader and more in-depth understanding of complex topics (Creswell, 2014). Creswell's rules for mixing quantitative and qualitative data follow under 3.2.1.

3.2.1 *Implementation, Integration and Priority for Mixed Methods*

Creswell (2014) reasons that the first step for mixed methods, before the commencement of any study, is to establish a preferred sequence for mixing the data. Some academics prefer to mix the data during data collection, whereas others endorse mixing at any stage of the process (Gray, 2009). Fielding (2012) contends that mixing the data should occur when the purpose of the research is to integrate two "fundamental ways of thinking" (p. 126).

Schram (2014) maintains there is a debate because the "genre of mixed methods is a rather recent and developing field" (p. 2620).

Nevertheless, Creswell (2014) claims that all mixed method research has a principal focus. If methods do not correspond; the researcher must be prepared to nominate a priority for either qualitative or quantitative inquiry. As content analysis is a flexible method for determining meaning from communication (Elo & Kyngäs, 2008), the following section is an overview of content analysis and mixed-method research.

3.3 Content Analysis and Mixed Methods

Content analysis originated as a scientific, objective, quantitative method for analysing texts (Krippendorff, 1980; Neuendorf, 2017). In the social sciences, areas such as "communication, journalism, sociology, psychology, business and other disciplines" use content analysis (Neuendorf, 2017, p. xv).

A summary of seven definitions of content analysis by Berelson (1952), Elo and Kyngäs (2008), Krippendorff (1980), Neuendorf (2017), Riffe, Lacy & Fico (2005), Stempel III (1989) and Weber (1990) and their association with quantitative or qualitative analysis provided insights into the most appropriate methods for this research. See Table 7.

Table 7

Seven Definitions of Content Analysis

Author/s	Definition of Content Analysis	Analysis
Berelson (1952)	[Content analysis] "is a research technique for the objective, systematic and quantitative description of the manifest content of communication" (p.18).	Quantitative
Elo & Kyngäs (2008)	"Content analysis is a method that may be used with either qualitative or quantitative data and in an inductive or deductive way" (p.107).	Qualitative or Quantitative
Krippendorff, (1980)	"Content analysis is a research technique for making replicable and valid inferences from data to their context" (p.21).	Qualitative or Quantitative
Neuendorff (2017)	"Content analysis may be briefly defined as the systematic, objective, quantitative analysis of message characteristics. It includes both human-coded analysis and computer-aided text analysis (CATA) (p.1)".	Quantitative
Riffe, Lacy & Fico (2005)	"Quantitative content analysis is the systematic and replicable examination of symbols of communication, which have been assigned numeric values according to valid measurement rules and the analysis of relationships involving those values using statistical methods, to describe the communication, draw inferences about its meaning, or infer from the communication to its context, both of production and consumption (p.25)".	Quantitative
Stempel III (1989)	"Content analysis is a formal system for doing something we all do informally rather frequently, drawing conclusions from observations of content" (p.124).	Quantitative (acknowledges Qualitative)
Weber (1990).	"Content analysis is a research method that uses a set of procedures to make valid inferences from text" (p.10).	Qualitative and/or Quantitative

Berelson (1952) contends that content analysis "is a research technique for the objective, systematic and quantitative description of the manifest content of communication" (p.22). However, since the 1950s, quantitative content analysis has received criticism for its one-dimensional focus and for mixing objectivity with quantification. These are similar criticisms to those levelled at science. Criticisms, however, that Krippendorff (1980) claims supporters of quantitative approaches "largely ignored" (p.17). However, Stempel III (1989) questions whether the criticisms were more a case of procedural failure that produced a "lack of meaning" (p.126).

In the book, *Content Analysis: An Introduction to its Methodology,* Krippendorff (1980) argued that the method was at a "crossroad" and it could either continue "the counting game" or "pursue more seriously …. the claim to analyse something…as a symbolic phenomenon" (p.7).

According to Stempel III (1989), the paradigm, "WHO says WHAT to WHOM with WHAT EFFECT" is the best summary of content analysis (p.125). The full potential for content analysis only occurs if the communicator, content, audience and effects are all related.

Content analysis is also "a research method that uses a set of procedures to make valid inferences from text". Content analysis can use "both qualitative and quantitative operations on texts" (Weber, 1990, p.10). Weber (1990) recommends "anyone seriously interested in the subject" should read Krippendorff (p. 15).

Similarly, Elo and Kyngäs (2008) argue content analysis is open to interpretation and thus can employ either quantitative or qualitative methods, or both. Furthermore, the inclusion of qualitative perspectives can provide a deeper understanding of the data (Boréus & Bergström, 2017).

In contrast, Neuendorff (2017) claims content analysis is, "only one type …systematic and quantitative" (p.9.). However, Neuendorff agrees the line between quantitative and qualitative becomes thinner as content analysis methods are "stretched and adapted to the changing times" (p.3). However, scholars concur that content analysis is a valuable research tool for understanding meaning in human communications.

Boréus and Bergström (2017) describe quantitative content analysis as a method that counts, measures and interprets data using computer software. In contrast, qualitative content analysis involves "complex interpretations that can only be done by humans" (p. 24).

However, with the rise of *Computer Assisted Qualitative Data Analysis* (CAQDAS) and software such as NVivo and MAXQDA, choosing either quantitative or qualitative analysis is not a straightforward decision (Kuş Saillard, 2011). Nevertheless, Boréus and Bergström (2017) warn that computer analysis alone cannot achieve implicit data interpretations.

Overall, content analysis is a practical tool and a discreet way for the scholar in social research to unobtrusively observe the meaning people give to content (Jervis & Brand, 2014; Krippendorff, 1980). Furthermore, the flexibility of content analysis provides a myriad of options regarding the possible size and scope of a study (Elo & Kyngäs, 2008; Jervis & Brand, 2014; Krippendorf, 1980). To this end, the following list, provided by Krippendorf (1980), is presented as a foundation of core principles to guide the content analysis process for this research (pp. 22 - 25):

1. Messages do not have a single meaning…Data is accessible from numerous perspectives.
2. Meanings need not be shared… meanings are always relative to the communicator.
3. Messages and symbolic communications are generally about phenomena other than those directly observed… the context of data.
4. Any description entails inferences… content analysis, even with descriptive aims, must be valid and specific regarding the context to which the findings pertain.
5. The purpose of content analysis is to provide information and new understandings. The technique is being "stretched and adapted to the changing times" (Krippendorff, 1980; Neuendorf, 2017, p.3).

Technically, the best method of content analysis is the one most suited to the study. Thus, the researcher must choose (Berelson, 1952; Elo & Kyngäs, 2008; Krippendorff,1980; Neuendorf, 2017).

3.4 Choosing an Analytical Method

The first consideration in choosing an analytical method is to refer to the purpose of the research (Boréus & Bergström, 2017). If the plan is to count or measure and the principal method for data interpretation is a computer, then the inquiry should be predominantly quantitative.

In contrast, if the analysis will use "complex interpretations that can only be done by humans" (Boréus & Bergström, 2017, p. 24), then the study is qualitatively focused. If necessary, mixed methods allow for analysing the same data using quantitative and qualitative methods (Elo and Kyngäs (2008).

The researcher can choose from any number of analytical methods from a range of different academic sources. Furthermore, there is no collective agreement on the 'best' way for a researcher to analyse their content (Neuendorf, 2017). Table 8 presents a summary and short description of analytical options provided by Boréus and Bergström (2017), Krippendorff (1980) and Neuendorf (2017).

Table 8

Boréus & Bergström (2017), Krippendorff (1980), Neuendorf (2017)

Author/s	Approach	Description
Boréus & Bergström (2017)	Argumentation analysis	Studies ideational aspects in texts. Used for persuasion. Related to the wider approach of rhetoric (p.7).
	Content analysis	Content analysis may focus on the ideational and interpersonal aspects of texts. Can be qualitative or quantitative analysis (p.7).
	Critical linguistics	The grammar and choice of words in a text convey information about the world view expressed in that text (p. 8).
	Discourse analysis	Linguistic practice in context or linguistic and other kinds of social practice. What ought (not) to be said in context, what categories are in use, what is taken for granted but not expressed (p. 8).
	Metaphor analysis	Studying how people conceptualize abstract and complex social phenomena through the metaphors they use (p. 8).
	Multimodal discourse analysis	Analysis of pictures and text and their ideational and interpersonal aspects. Pictures and language can represent reality in different ways (p.8)
	Narrative analysis	Narrative analysis is the explication of stories to gain insight into ideological power and 'common-sense' understandings of the way the world works (p. 8)

Author/s	Approach	Description
	Qualitative analysis of ideas and ideological content	Focus on intentional action. The aim is to identify, interpret, describe, classify the ideological content in thought and language (p.7).
Krippendorff (1980)	Computer text analysis	In the late 1950's computer languages especially suited for literal data processing were developed…The often-large volumes of written documents to be analysed and the repetitiveness of the task made the computer a natural ally of content analysts (p.19).
	Descriptive content analysis	Descriptive content analysis is one in which all variables analysed are measures from within the content analysis, without attempts to infer or predict to source variables or receiver variables (p.44).
	Interaction Process analysis	Interaction process analysis of small group behaviour used verbal exchanges as data through which group process could be examined (p.18).
	Personal structure analysis	In psychology, the analysis of verbal records to discover motivational, psychological, or personality characteristics. The use of qualitative data gathered in the form of answers to open ended questions, verbal responses to tests, and the construction of Thematic Aptitude Test stories (p.18).
	Propaganda analysis	Propaganda analysis started out as an instrument for identifying individuals as "unethical" sources of influence during its first large scale application during WWII (p.16).
	Quantitative newspaper analysis	The turn of 20th century bought a visible increase in mass production of newsprint in United States. Considered the first analysis of this kind asked, "Do Newspapers Now Give the News?" (Speed, 1893). Quantitative newspaper analysis bore many new ideas that continue today (p. 14).
Neuendorf (2017)	Descriptive Content Analysis	Description of topics in media texts through consistency and connection of words to theme analysis of content and establishment of central terms. Typifying media representations (p.11).
	Inferential Content Analysis	The formation of theory from the observation and coding of messages, involves theoretical sampling; analytical categories; cumulative, comparative analysis; and the formulation of types or conceptual categories (p. 12).
	Predictive Content Analysis	Measurement of key characteristics of messages, the researcher may aim to predict receiver or audience responses to messages. Means content analysis must merge with other methods that use people as units of data collection and analysis (e.g., survey). Prediction of public opinion (p.46).
	Psychometric Content Analysis	Used in field of psychology. Method seeks to a) provide a clinical diagnosis for an individual through analysis of messages (clinical content analysis) b) measure a psychological trait through message analysis (thematic content analysis). Measures are validated against external standards (p.45).

It is clear from the analytical approaches outlined in Table 8 that there are options available to the researcher. However, Neuendorf (2017) acknowledges that these labels are not an exact classification and may cause disagreement amoung practitioners.

Authors Boréus and Bergström (2017), in their book *Analysing Text and Discourse: Eight Approaches for the Social Sciences*, use an umbrella term: *Textual Analysis* to describe the investigation and scrutiny of something. In this context, the authors place *Content Analysis* as one of the eight analytical options for text and speech, as shown in Table 8.

The description for content analysis provided by Boréus and Bergström (2017) was considered the best fit for this research:

> Content analysis may focus on the ideational and interpersonal aspects of texts. Can be qualitative or quantitative analysis (p.7).

Any analytical process aims to use a method that, as much as possible, is deemed reliable and presents valid results. Krippendorff (1980) and Neuendorf (2017) maintain a study has a higher chance of being reliable and valid if the researcher follows a systematic or standardised process to support the chosen method.

The following section describes the steps taken in this research for integrating an analytical approach that resulted in a research *Design* for mixed methods.

3.5 An Integrative Analytical Approach

Krippendorff (1980), Neuendorf (2017) and Stempel III (1989) provide varying degrees of necessary steps, or considerations, for typical content analysis. This process provides a structure to the research *Design* circumstances and promotes best practices for the method.

In a side-by-side display, Table 9 presents the content analysis guidelines of Krippendorff (1980), Neuendorf (2017) and Stempel III (1989). The information in Table 9 helped the researcher to determine an analytical approach for this study's research design.

Table 9

Krippendorff (1980), Neuendorf, (2017), Stempel III (1989)

Krippendorff (1980)	Neuendorf (2017)	Stempel III (1989)
Identify the data. Be unassuming and aware that the analyst is "unable to manipulate reality" (p. 26).	The researcher must determine, "What content …, and why"? (p.40). Are there theoretical perspectives that are meaningful to the study? What approach to content analysis will be appropriate? (e.g., Integrative). Are there research questions or hypotheses?	"Selection [of the unit of analysis] must be relative to the purpose of the study" (p. 127).
Explain the contextual information surrounding the data and establish the boundaries of the study.	The analyst must conceptualise the study and discuss the variables that will define the concepts.	
Establish existing knowledge and assumptions "about how the data and their environment interact" (p. 27).	What are the measures that will match and balance the variables selected during the second step? The analyst is required to create a valid "a priori coding scheme describing all measures" (p. 40).	"Category construction" (p. 127). The researcher should choose an existing or already developed coding system.
State the aim of the study. How will the analyst "make inferences"? (p. 27).	The analyst must consider whether the data will utilise human coding or CATA (computer-aided text analysis) or both. Coding schemes, in some way, are necessary for both options.	
Identify the evidence needed to justify the results. How does the analytical construct, accomplish these justifications?	Establish sampling. Is the sample a census and if so, why is this desirable? How does the sample represent a population?	"Sampling of content" (p.130). The sample must represent the intended population.
Specify evidence required to validate findings, in advance.	Steps 6, 7a and 8 discuss the process for training and coding using reliability testing with at least two coders.	"Reliability of coding" (p. 132). The analyst should be concerned about reliability through consistency of classification.
	Step 7b can be applied directly after step 5 if desired; coding the sample text using methods available through CATA. The final step involves "reporting the results of the analysis and establishing construct validity" (p. 41).	

As shown in Table 9, Krippendorff (1980) defines six steps as a content analysis framework. Neuendorf (2017) refers to the process as a "flowchart" (p.39) and Stempel III (1989) calls them four considerations for the researcher and analyst (p.132).

The following steps are a synthesis of the information in Table 9 and form the analytical considerations for this research *Design*. Following Krippendorff (1980), Neuendorf (2017) and Stempel III (1989), this thesis will endeavour to implement the following eight guidelines:

1. Identify the purpose of the study.
2. Select relevant content for analysis.
3. Select variables to define the study boundaries.
4. Create a codebook or coding scheme with descriptions of measures.
5. Decide how the data will be analysed (e.g., Human coding or CATA).
6. Determine a sample frame suitable for an intended population.
7. Establish a process to ensure coding reliability.
8. Report the results.

These eight guidelines inform the research *Design* discussed in the following section, 3.6.

3.6 Research Design

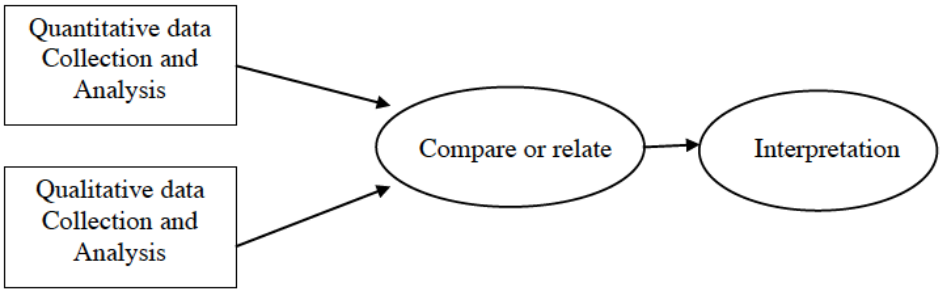
The primary aim of this research was to shed light on the meaning of *Design* for professionals in the workplace. The research question was:

1. How do professionals in *Design* and professionals in business communicate the meaning of *Design*?

Three studies responded to three sub-questions to provide deeper insights into the meaning of *Design*. The three studies formed a mixed method convergent parallel *Design*, which meant that the data from each study could be collected independently (Creswell, 2017). The mixed method approach provided an in-depth understanding of the research questions with no preference for either quantitative or qualitative perspectives (Creswell & Plano Clarke, 2017; Smith, 2005). See Figure 11.

Figure 11

Convergent Parallel Mixed Method

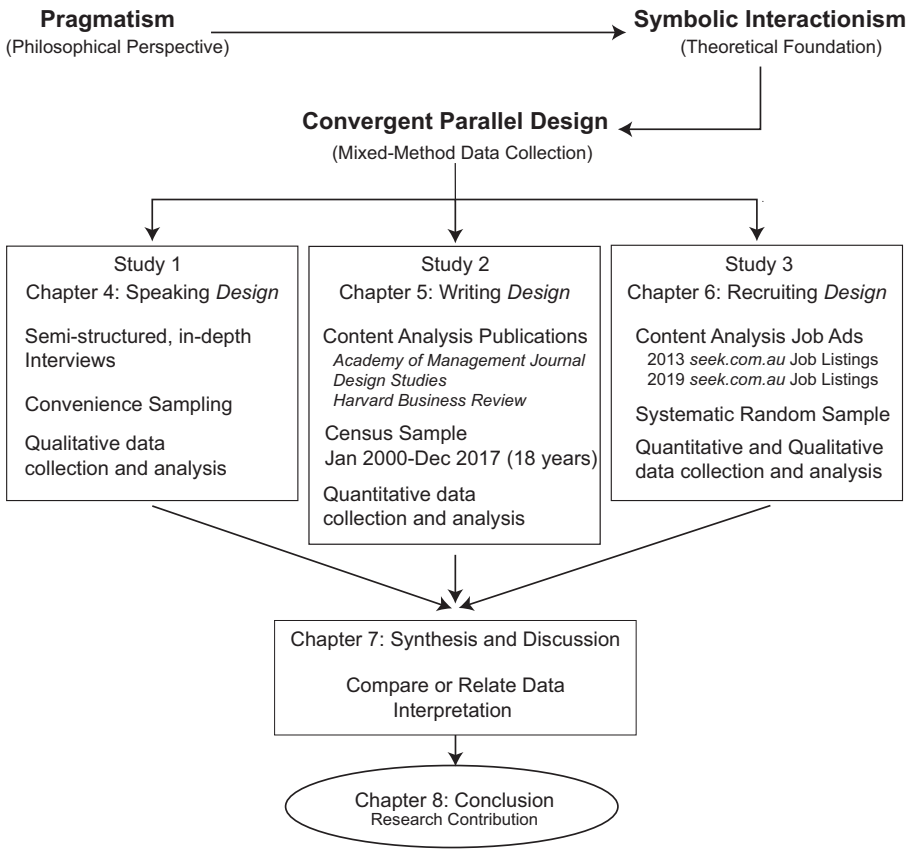


Based on Creswell and Plano Clarke (2017).

The purpose of the studies was to capture "something important in relation to the overall research questions" (Braun & Clarke, 2006, p.10). See Figure 12 for an illustrated view of the research design for this thesis.

Figure 12

Research Design Diagram



3.6.1 *Study One*

Study One was a qualitative analysis of data gathered through semi-structured, face-face interviews with professional businesspeople. This first study sought to answer the research sub-question: What meaning do people give to *Design* in professional settings?

Campbell, Quincy, Osserman and Pedersen (2013) argue that interviews "constitute the empirical backbone of much qualitative research in the social sciences" (p.295). Following the analytical steps outlined previously, the purpose of the study was an opportunity for the researcher to hear, first-hand, what meaning professionals in the workplace give to *Design*.

The theory of *Symbolic Interactionism* provided a framework for the interview questions and the collection of relevant content for analysis. Data included details of the participant's work, what meaning they gave to *Design* and how they act towards it within a group setting. Analysis of the data would involve human transcription of recorded interviews and computer-assisted coding. Recruitment of participants was through convenience sampling. Although this sampling process does not represent a population, it was still suitable for predicting trends (Gray, 2009).

Study One methods and results are presented in Chapter 4: *Speaking Design.*

3.6.2 *Study Two*

The second study aimed to examine how different professional publications and their authors communicated a meaning for *Design*.

Study Two was motivated by Guilford (1950), who conducted a content analysis of indices in the journal *Psychology.* Guilford used a census of articles over a 23-year timeframe to obtain a more physical sense of how the authors valued creativity.

Thus, the research question guiding the second study was: How do professional publications and their authors communicate a view of *Design* through their writing?

The content chosen for analysis was the published articles in three professional, periodical journals. The study boundaries were from January 2000 to December 2017, a period of 18 years. The second study examined the associated meaning authors give to *Design* in the titles, abstracts and keywords of published articles in

the journal disciplines of management*, Design,* and business. For instance, the use of *Design* in the keywords represented the amount of focus that the authors' placed on *Design* (Whittaker, Courtial & Law, 1989).

The sample frame was a census of articles for each of the three publications over the 18 years. The study was a quantitative analysis that used computer-assisted coding. The results from a large sample can be more reliable as there is less risk of sampling errors (Coughlan, Cronin & Ryan, 2007; Neuendorf, 2017).

Chapter 5 *Writing Design* presents the methods and results for Study Two.

3.6.3 *Study Three*

The purpose of Study Three was to examine the meaning of *Design* as businesses communicate it during their recruitment processes. This study aligned with the third research sub-question: How do businesses use the term *Design* in their online job ads?

An online job portal, *seek.com.au*, defined the study's boundaries. Thus, the most relevant content was the job ads posted by businesses on the website.

Study Three was first undertaken in the first two months of 2013 and was then repeated at a similar time, using the same codebook variables, in early 2019. The analysis was both quantitative and qualitative and utilised a combination of computer-assisted coding and human coding.

Study Three aligned with the third research sub-question: How do businesses use the term *Design* in their online job ads?

The premises of *Symbolic Interactionism* informed the variables included in the codebook. One focus of the data collection was the frequency of *Design* stated explicitly in the job titles compared to its general inclusion in the body of the ad (Whittaker, Courtial & Law, 1989).

The most suitable method for choosing content from the dynamic nature of the online medium was a systematic random sample. A coding scheme ensured that the coding process was as reliable as possible. Study Three methods, analysis and results appear in Chapter 6: *Recruiting Design*.

Figure 12, at the start of this section, provided a Research *Design* diagram of the information discussed in this chapter. Each study's methods and results are chapter-specific and follow in order: Chapter 4: Study One, Chapter 5: Study Two and Chapter 6: Study Three.

Chapter 4: **Study One *Speaking Design***

Chapter four presents the methods and results for the first study. Study One consisted of seven face-to-face, semi-structured, in-depth interviews.

Interviews are a valuable method for illuminating the meanings of language in the social sciences (Alshenqeeti, 2014, Legard, Keegan, & Ward, 2003). They offer opportunities to collect exact and detailed data. Furthermore, the interviewer's role can enhance "respondent participation by guiding questioning, answering the respondent's questions, and clarifying the meanings of responses" (Oishi, 2003, p.6).

Interviews were once a structured and traditional approach. However, over time, the methodology has expanded and diversified across methods, techniques and various disciplines (Gubrium, Holstein, Marvasti, & McKinney, 2012). Nevertheless, as with any method of data collection, there are advantages and disadvantages. Therefore, planning the interview process and who the participants might be is a significant consideration for the researcher (Oishi, 2003). Generally, the researcher assumes interview participants have a sense of their own identity (Alshenqeeti, 2014; Barnett, 2005; Gubrium et al., 2012).

The following sections describe Study One and the participant recruitment process (4.2), the interview process (4.3) and the subsequent data coding process (4.4). Section 4.5 describes the results from coding the interview data.

4.1 Interview Participants

For this study, there was no attempt to obtain a representative sample or generalisation of the population. Thus, convenience sampling allowed the researcher to have open and financially viable access to potential interview participants (Lavrakas, 2008). While convenience sampling would not represent a sample of all professionals, this type of sampling can be a useful indicator of trends (Daly, 2008; Gray, 2009).

The nature of convenience sampling means the researcher is known to the prospective interviewees. In keeping with Bond University ethics requirements, the people approached by the researcher were under no obligation to take part in the interviews. An email communication assured participants that:

a) there was no obligation on their part,
b) if they did agree to an interview, all responses would be anonymous and
c) they had the right to withdraw at any time, during or after the interview (Ritchie & Lewis, 2003).

A copy of the email used to approach and provide information to the participants is available under Appendix A. Out of nine approaches, seven professional people agreed to an interview. To thank the participants for their time, the researcher offered a brief overview of the thesis results. Five of the seven respondents accepted, while two declined the offer.

4.1.1 *Participant Selection Criteria*

Study One interviewees eventually comprised four women and three men. The participants were all of Australian nationality. Four of the participants worked and lived in Perth, Western Australia, one person in Sydney, Australia, and one in California, the United States. All the interviews took place in Australia.

The aim of Study One was to present a *Symbolic Interactionist* perspective of professionals in the workplace. People generally do not choose their work colleagues. With this in mind, the study's primary focus was to gain insights from people working in diverse professional roles, meaning each participant's role was unique. None of the interview participants had the same job (Daly, 2008).

The second focus for Study One was to ensure the sample of professional people included a substantial representation of non-*Design* professionals, in other words, people 'without' *Design* qualifications

The following (Table 10) displays the participants' gender, age group, professional role, *Design* background and the geographical location of their work.

Table 10

Participant Selection Information

Gender	**Age Group**	**Nationality**	**Professional Role**	***Design* Background**	**Workplace Location**
Female	25 - 35 yrs.	Australian	Project Development Coordinator, Engineering	Non-*Design* background. Engineering, technology, security.	Perth, WA
Female	25 - 35 yrs.	Australian	Client Liaison Officer	Non-*Design* background. Marketing.	Perth, WA
Male	25 - 35 yrs.	Australian	Content and Digital Manager	Professional *Design* Background. Art Direction.	Perth, WA
Female	50 – 60 yrs.	Australian	Manager, Wholesale Jewellery Manufacturing	Non-*Design* background. Sales. Fashion.	Perth, WA
Male	25 - 35 yrs.	Australian	Director of Mortgage Broking, Finance	Sales, Finance. Non-*Design* background.	Sydney, NSW
Female	50 – 60 yrs.	Australian	Craft Blogger	Self-taught creative. Non-*Design* background.	Perth, WA
Male	25 - 35 yrs.	Australian	*Design* Sprint Coach, Consultant	Entrepreneur. Self-taught *Design*. Enabled Amateur.	California, USA

The aim of Study One was to examine the meaning of *Design* for a random cross-section of people. The sample would include *Design* professionals and those not associated with *Design.* Thus, the participant's age, type of career or professional status and how long they had held their position were not selection criteria for this study.

Although gender was not an initial requirement for inclusion, the researcher approached both female and male professionals.

Finally, the researcher's access to the participants had to be suitable for the researcher and the participants. The following points summarise the participant's various professional roles and their association with *Design*:

1. Project Development Coordinator: Non-*Design* background.
2. Client Liaison Officer: Non-*Design* background.
3. Content and Digital Manager: Professional *Design* background.
4. Manager, Wholesale Jewellery Manufacturer: Non-*Design* background.
5. Director of Mortgage Broking: Non-*Design* background.
6. Craft Blogger: Self-taught *Design* background.
7. Design Sprint Coach, Consultant: Self-taught *Design* background.

4.1.2 *Interview Saturation*

Researchers agree that data saturation is a criterion for determining the number of interviews required in a study. However, Fusch and Ness (2015) maintain that the data's quality is more important than the number of interviews in qualitative research. Furthermore, it is possible to reach data saturation in as few as six interviews because "There is no one-size-fits-all method" (Fusch & Ness, 2015, p.1409).

A sign of saturation occurs when the data can be "generalised" and examples readily supplied when asked (Saunders et al., 2017, p.1897).

The three premises of *Symbolic Interactionism* defined the saturation points for Study One. After seven interviews, the researcher was aware that responses from the participants were becoming predictable and in keeping with the literature (Fusch & Ness, 2015). Participants who had limited or no association with *Design* were not interested in the meaning of *Design*. The participants associated with *Design* but had no *Design background* could not define or confidently talk about it. The participants with professional *Design* associations were frustrated by a general lack of understanding about *Design* in the workplace.

Table 11 provides an overview of the three domains of inquiry relating to *Symbolic Interactionism.* The table shows the generalised terms that emerged from the data. As no new themes emerged by the seventh interview, the researcher determined saturation for this particular study.

Table 11

Interview Saturation

Symbolic Interactionist Premises	**Participants**						
	P1	**P2**	**P3**	**P4**	**P5**	**P6**	**P7**
1 The meaning of *Design* or *Design* related concepts for the participant.							
Confusion	X	X	X	X	X	X	X
2 The meaning of *Design* in regard to the participant's social interaction in the workplace.							
Frustration		X	X				X
Irrelevant or unsure	X			X	X	X	
3 The interpreted meaning of *Design* concerning the participant's workplace interactions.							
Not previously thought about defining *Design*	X	X	X	X	X	X	X

In Table 11 the first *Symbolic Interactionist* premise relates to the meaning of *Design* for the participant.

All seven participants noted that, in some way, the meaning of *Design* was confusing. If not for themselves, then certainly for other people in their domain.

The second *Symbolic Interactionist* principle refers to the meaning of *Design* found during the participant's social interactions in the workplace.

As noted in the literature, *Design* professionals are frustrated by the lack of respect shown to *Design* in the workplace by other professionals. A third participant, who worked closely with designers, consciously managed the *Design* and business communication gap.

Also aligned with the literature, two participants, one each working in engineering and finance, dismissed *Design* claiming, it was irrelevant to them.

The third *Symbolic Interactionist* premise refers to the participant's interpreted meaning of *Design.* In other words, their thoughts about *Design in the* workplace. All seven participants commented that the meaning of *Design* or *Design Thinking*, creativity or innovation was not something they had given much thought to before the interviews.

See Appendix D for more in-depth details of the participant responses to the questions. The following section (4.2) describes the interview process.

4.2 The Interview Process

Interviews took place in the second half of 2016 and the first half of 2017. The researcher expected to have only one interview per participant but with the option to have further contact with them if required. The researcher was the sole interviewer for all seven semi-structured and in-depth interviews.

The researcher used a checklist to support the "rigour and transparency of the interviewing process" (Bleich & Pekkanen, 2013, p. 84). Thereby ensuring each interview process was the same and that each participant received the same information (Gray, 2009).

Before the interview started, the researcher went over the study's aims with the participant. The review included their rights to anonymity and their options for withdrawal from the study. Permission to record the interview was then requested. Each participant signed an *Interview Release Form* to acknowledge their understanding of the interview process.

A copy of the interview release form is available under Appendix B.

Gray (2009) describes direct face to face communication as intimating for the respondent. The best seating arrangements are across a desk or table, with the participant and researcher or interviewer sitting at slight angles. Gray (2009) recommends that the researcher not reveal notes or upcoming questions during the interview process.

Five of the seven interviews took place in the participants' homes. Although the researcher was not in control of the seating arrangements, overall, the seating was satisfactory. Two meetings took place in an office environment with the researcher and participant seated at slight right angles around a table (Gray, 2009). The researcher noted that one participant did try and view the researcher's notes and upcoming questions. As the table was small, it was difficult to hide this information, as suggested by Gray (2009), without seeming rude.

Gray's (2009) interview checklist and "do and don'ts of interviewing" (p.387) helped guide the interview process for this study as well as the interview questions. See Gray's (2010) interviewing guide in Table 12.

Table 12

Interviewing Guide (Gray, 2009, p.387)

Do	Don't
Establish clearly what the interviewee thinks.	Do not give an indication to the interviewee of your meanings and understanding or appear to judge their responses.
Provide a balance between open and closed questions.	Do not ask leading questions or questions to which it is easy for interviewees to simply agree with all you say.
Listen carefully to all responses and follow up points that are not clear.	Do not rush on to the next question before thinking about the last response.
If necessary, either gain interviewer thinking time or for the clarity of the audio recording, repeat the response.	Do not respond with a modified version of the response but repeat exactly what was said.
Give the interviewee plenty of time to respond	Do not rush, but do not allow embarrassing silences.
Where interviewees express doubts or hesitate, probe them to share their thinking.	Avoid creating the impression that you would prefer some kind of answers rather than others.
Be sensitive to possible misunderstandings about questions, and if appropriate repeat the question.	Do not make any assumptions about the ways in which the interviewee might be thinking.
Be aware that the respondent may make self-contradictory statements.	Do not forget earlier responses in the interview.
Try to establish an informal atmosphere.	Do not interrogate the interviewee.
Be prepared to abandon the interview if it is not working.	Do not continue if the respondent appears agitated, angry or withdrawn.

Gray, D. E. (2009). *Doing Research in the Real World* (2nd ed.). SAGE.

4.2.1 *Interview Questions*

The interviews used eleven predetermined questions with six to eight sub-questions outlined in a question structure for the interviews (Legard et al., 2003). In each interview, the researcher asked each question as it appeared in the question guide (Gray, 2009). See Appendix C for a copy of the interview questions.

There were four main groups of questions, of which *Symbolic Interactionism* informed three groups. The first group of questions established an understanding of who the participant was, for example, gender, age, job title and professional discipline.

The second group of interview questions focused on Blumer's (1969) *Symbolic Interactionist* premise that human beings act towards something based on the meaning they give to it.

Therefore, the questions asked participants about their meaning of *Design* and other *Design*-related terms such as creativity, innovation and *Design Thinking*.

The second premise of *Symbolic Interactionism* states that the meaning of *Design* would have emerged from participants social interactions with others (Blumer, 1969). The second group of questions asked about backgrounds. In particular, if the participants associated with *Design* while growing up. Whether they studied *Design* at school or had qualifications from higher education and finally, what were their *Design* experiences in the workplace and opinions of teamwork.

The third premise states that "these meanings are handled in and modified through an interpretative process used by the person in dealing with the things he encounters" (Blumer, 1969, p.2). The remaining questions asked how the participants gathered information through reading online and what software they used or would like to learn in their future. The purpose of these questions was to see how each participant interpreted information from outside their immediate social interactions. The researcher recognised that these questions were not central to the meaning of *Design*, but they did provide insights into the participants thinking.

Moreover, how the researcher interpreted this information was also relative to *Symbolic Interactionism's* third premise (de Nooy, 2009).

4.2.2 *Pilot Interview*

Pilot interviews allow the researcher to practice the interview process and identify any concerns (Mohd, Othman, Fatimah Mohamad, Abdul Halim Lim, & Yusof, 2017). Thus, the researcher conducted a pilot for Study One before conducting interviews with the participants.

At the time of the pilot study, the order of questions started with the participant's background followed by their education and finally, their meaning of *Design*.

However, the order of questions seemed confusing for the participant in the pilot study. The participant was 'expecting' questions about *Design* and not her childhood.

To continue the interview, the researcher had to explain *Symbolic Interactionism* and its connection to meaning and social interactions. Consequently, for subsequent interviews, the order of questions was adjusted, so the *Design* questions came first.

The pilot study also revealed some of the question wording needed adjustment to ensure the questions were fully understood. Overall, the interviews seemed to flow naturally, and the participants seemed comfortable answering the questions.

4.2.3 *Instrument and Audio Files*

The researcher used an Apple iPhone 6s as the recording instrument for the interviews. The average length for the interviews was 29:34 minutes. The shortest time was 17:03 minutes and the longest time 43:37 minutes.

In most of the interviews, the recording was stopped and restarted at some stage. For example, during audio sound testing or if the participants unexpectedly remained engaged with the topic after the interview 'ended', the researcher asked to continue recording. The result was eighteen .m4a files for the seven interviews.

4.2.4 *Software*

There are multiple options for conducting qualitative data analysis (Silver and Lewins, 2014). For example, *New York University Libraries* provide a comparison chart for *Atlas Ti*, *NVivo*, *Taguetter*, *Dedoose*, *QDA Miner*, *MAXQDA*, and *QCoder* (New York University Libraries, n.d).

Bond University provides free access and support to staff and students for the *NVivo* software. *NVivo* is an established software for coding qualitative data. It was created by QSR, Australia, in the 1980s and 1990s for Windows. However, the researcher works predominantly with the Mac platform. At the time of Study One, *NVivo for Mac* was a new release. Unfortunately, there were many critical features in the Windows version not available for the Mac platform at that time.

MAXQDA, named after sociologist Max Weber, is a leading software that offers an equivalent experience for users of both Windows and Mac platforms.

Researchers actively use the MAXQDA software in over 150 countries to code qualitative and mixed method data (MAXQDA, n.d.).

For Study One, the researcher chose the version *MAXQDA18 Analytics Pro* as it included a feature called *MAXDictio,* as well as:

1. Audio transcription tools with slow and fast playback options for .m4a files.
2. Word search and frequency function.
3. Text exploration tools.
4. Quantitative content analysis options.

The following section (4.3) describes the phases for coding the interview data.

4.3 Content Analysis

Content analysis, as defined by Boréus and Bergström (2017), can focus on "ideational and interpersonal aspects of texts [and] can be qualitative or quantitative analysis" (p.7). Thus, *Qualitative Content Analysis* (QTA) is the process of coding and categorising qualitative data (Braun and Clarke, 2006; Kuckartz, 2019). QTA is also known as Thematic analysis. According to Braun and Clarke (2006), thematic analysis sits in the middle of an investigation that a) does not follow any structure and b) one that is excessively controlled.

However, qualitative analysis means that no one is an authority and the coding requirements vary among scholars. Saldaña (2013) maintains that as each qualitative study is unique, the enquiry process will also be unique.

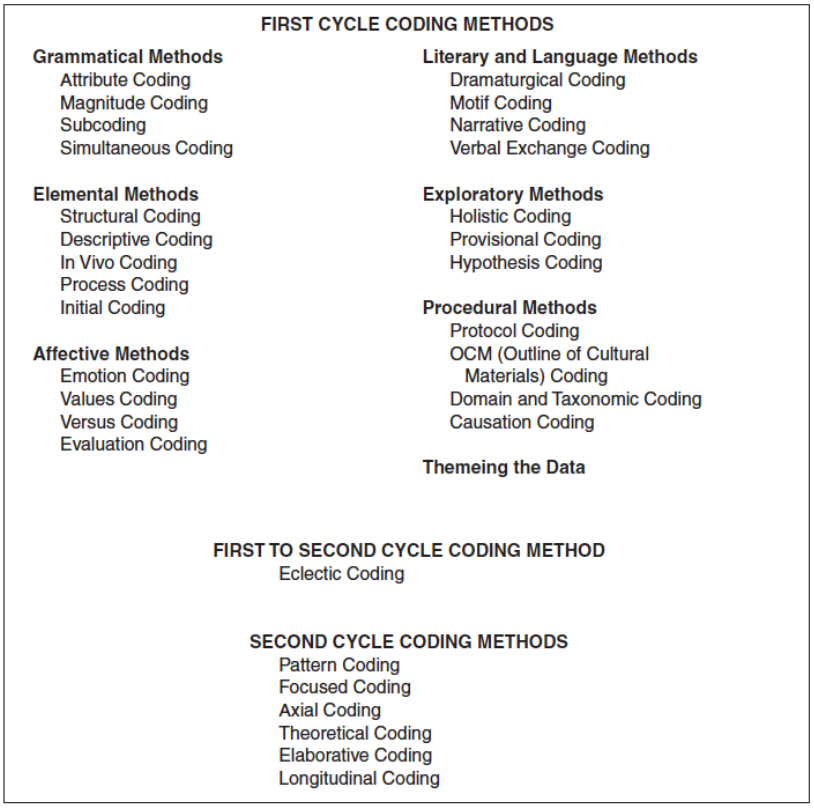
4.3.1 *The Coding Process*

> *Coding is...a method that enables you to organise and group similarly coded data into categories or "families" because they share some characteristic (Saldaña, 2013, p.9).*

Saldaña (2013) proposes two main phases for the coding process. Each phase has multiple options, 1) First Cycle Coding and 2) Second Cycle Coding. In Figure 13, First Cycle Coding methods encompass seven categories and each one has between three and five subcategories.

Figure 13

First and Second Cycle Coding Methods (Saldaña, 2013, p.59)



Saldaña, J. (2013). *The coding manual for qualitative researchers* (2nd ed.). SAGE.

According to Saldaña (2013), the subcategories under *Elemental Methods* are suitable for all qualitative studies and especially for coding "semi-structured data gathering protocols" (p. 267). In particular, 'Structural Coding' or 'In-Vivo Coding' is appropriate for data collected from interviews. Furthermore, In-Vivo Coding is often associated with developing a "new theory about a phenomenon or process", such as *Grounded Theory* (Saldaña, 2013, p. 65).

The First Cycle In-Vivo Coding phase focuses on the exact words and phrases of "the participant's own language" (Saldaña 2013, p. 264).

In contrast, *Second Cycle Coding* requires skills such as "classifying, prioritising, integrating, synthesising, abstracting, conceptualising, and theory building" (p.58). *Second Cycle Coding* aims to group data based on similarity, meaning or organisation of patterns. See Table 13 for a comparison of qualitative content analysis or thematic coding by Braun and Clarke (2006) and Kuckartz (2019).

Table 13

Comparison of Qualitative Content Analysis

Braun and Clarke (2006, p.35)	Kuckartz (2019, p.187)
Familiarising yourself with your data.	Preparing the data, initiating text work.
Generating initial codes.	Forming main categories corresponding to the questions asked in the interview.
Searching for themes.	Coding data with the main categories.
Reviewing themes.	Compiling text passages of the main categories and forming subcategories inductively on the material; assigning text passages to subcategories.
Defining and naming themes.	Category-based analyses and presenting results.
Producing the report.	Reporting and documentation.

Table 11 compares the phases for qualitative content analysis or thematic coding by Braun and Clarke (2006) and Kuckartz (2019).

Saldaña (2013) argues that coding phases can overlap as they are not limited to exclusive use. Therefore, based on Braun and Clarke (2006), Kuckartz (2019) and Saldaña (2013), this research followed the six steps shown in Table 14.

Table 14

Final Qualitative Content Analysis Coding Phases

Phase	Description	Source
1	Preparation of the data.	Braun & Clarke (2006); Kuckartz (2019); Saldaña (2013).
2	Transcription and becoming familiar with the data.	Braun & Clarke (2006); Saldaña (2013).
3	First Cycle In-Vivo Coding.	Kuckartz (2019); Saldaña (2013).
4	Repeat First Cycle In-Vivo Coding for reduction of data.	Saldaña (2013).
5	Second Cycle Coding, for Categories and Themes.	Braun & Clarke (2006); Kuckartz (2019); Saldaña (2013).
6	Category-based analyses and presenting results.	Kuckartz (2019)

The process of In-Vivo Coding requires extensive time spent reading the participants' words. At the same time, the process allows the researcher to become increasingly familiar with the data (Saldaña, 2013).

Nevertheless, the name First Cycle Coding implies a single pass through the data, but, as Saldaña (2013) states, the cyclical process can continue as many times as required.

In Study One, the researcher repeated the First Cycle In-Vivo Coding phase a second time to enable an easier transition to data categorisation during Second Cycle Coding, for Categories and Themes. Section 4.4 presents the results for Study One. The results section explains the analysis findings and any themes emerging from the data (Anderson, 2010).

4.4 Study One Results

In the following sections, 4.5.1 discusses the preparation of data. Section 4.5.2 describes the decisions required for transcription of the interviews. 4.5.3 refers to the first categories assigned to the data, 4.5.4 is the First Cycle In-Vivo Coding Method and 4.5.5 explains the reasons for a repeat of the First Cycle In-Vivo Coding Method. 4.5.6 Second Cycle Coding, Categories and Themes presents the summary results and categories emerging from the previous steps.

Figure 14 represents a flowchart of the coding process used in Study One and the phases for thematic analysis adapted from Braun & Clarke (2006), Kuckartz (2019) and Saldaña (2013).

Figure 14

Transcript-to-codes-to-themes model

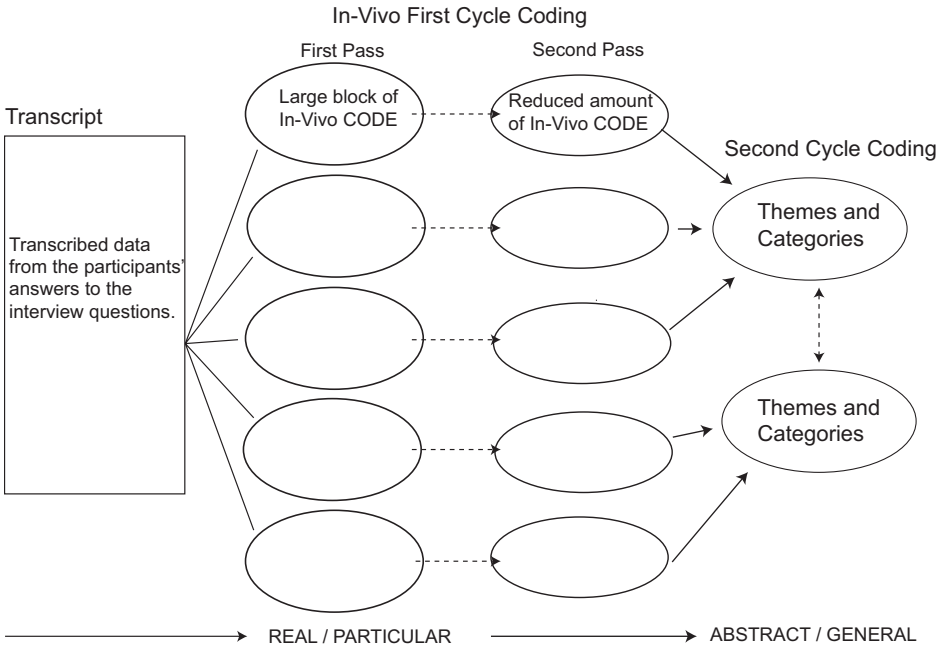


Figure 14 based on Saldaña (2013, p.13).

4.4.1 *Preparation of the Data*

There were two steps to preparing the interview data ready for analysis in Study One.

The audio files were initially saved on the interviewer's recording device and assigned a code to ensure anonymity for the participants. These audio files were transferred to a Bond University computer and stored on a secure, password-protected server at the university as soon as possible. Only the researcher and primary supervisor for this thesis had and have access to the original interview data.

The second step was transcription of the audio files.

4.4.2 *Transcription*

Bucholtz (2007) calls transcription "a sociocultural practice of representing discourse" (p.785). Nevertheless, there is no academic agreement on which transcription method is most suitable for qualitative analysis (Davidson, 2009).

Furthermore, the type of transcription method chosen can affect the results (Bucholtz, 2007). It is the researcher's responsibility to choose the most appropriate transcription method for the study (Lapadat & Lindsay, 1999).

Davidson (2009) maintains there are two transcription approaches, "naturalism" or "denaturalism" (p.39).

Under *naturalism*, every sound, including stutters, pauses and other involuntary recorded noises, are identified and documented with as much detail as possible.

The second approach, *denaturalism*, is the removal of all unnecessary sounds from the transcription (Davidson, 2009). Denaturalism, also known as 'clean' transcription, is used by most professional transcription services (Smart Docs, n.d.).

The researcher was the only person responsible for transcribing the 18 audio files. She was also aware that the choice of transcription method could affect results (Bucholtz, 2007).

Therefore, the researcher trialled both detailed and clean transcription methods. Table 15 shows two transcribed versions of the same text. The left column demonstrates a precise transcription method with all sounds and pauses identified.

The right column shows a clean transcription of the same interview text with extraneous words and sounds removed.

Table 15

Comparison of Detailed and Clean Transcription

Detailed Transcription	Clean Transcription
"Yeah, so that's another, sort of, um phrase I guess, that's, (.) I feel it's (0.2), it's, not common I don't think. Unless you're in a very um certain type of work place or a, like, er, in a certain environment, but it's definitely, um yeah, it's er, kind of, it's something that I feel like it is going to become more common, yeah".	"Yeah, so that's another, sort of phrase I guess, that's not common I don't think. Unless you're in a very certain type of workplace or in a certain environment, but it's definitely something that I feel is going to become more common, yeah".

It was clear from the example in Table 15 that the detailed transcription was harder to read and understand than the clean transcription.

Furthermore, the removing the additional sounds in the clean transcription did not change the participants' meaning (Bucholtz, 2007). Consequently, the researcher transcribed the 18 audio files using the clean transcription method.

4.4.3 *Computer Aided Transcription*

The software *MAXQDA18 Analytics Pro* included a feature called *MAXDictio* that could assist the transcription process. The *MAXDictio* feature allowed the researcher to transcribe the .m4a audio files directly in the software. This option assisted with the synchronisation of the transcript and audio file. The time spent painstakingly checking the transcriptions' accuracy helped the researcher "develop a familiarisation with the data at an early stage" (Gray, 2009, p.496).

In particular, the advanced playback options in *MAXQDA18 Analytics Pro* meant the speed rate was adjustable to the second. Thus, slowing down the playback rate helped decipher unusual accents or background noises. Furthermore, shortcut keys enabled effective navigation of the audio files. The software also offered line numbering and timestamping options.

The researcher could traverse back and forth in the transcribed data and compare it with the audio recordings as many times as needed (Jost, 2018). Section 4.4.4 discusses the process for the first cycle of In-Vivo coding.

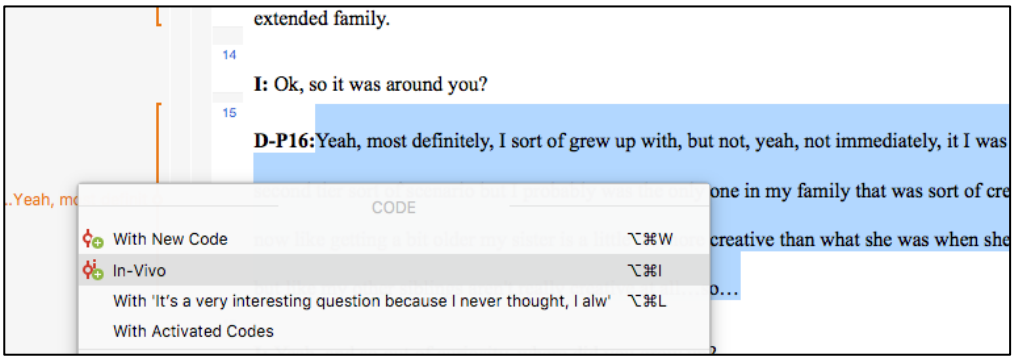
4.4.4 *First Cycle, In-Vivo Coding – First Pass*

MAXQDA18 Analytics Pro software offers multiple options for coding. The first step in First Cycle In-Vivo Coding was careful reading through the transcripts. The first pass of In-Vivo codes was selected sentences or passages of text considered relevant to the interview questions. A coloured line identified the In-Vivo code in the transcript.

Figure 15 shows a highlighted paragraph of text in the transcript, the In-Vivo coding option window and the coloured line that subsequently identified the code section.

Figure 15

First Cycle In-Vivo Coding in MAXQDA18 Analytics Pro

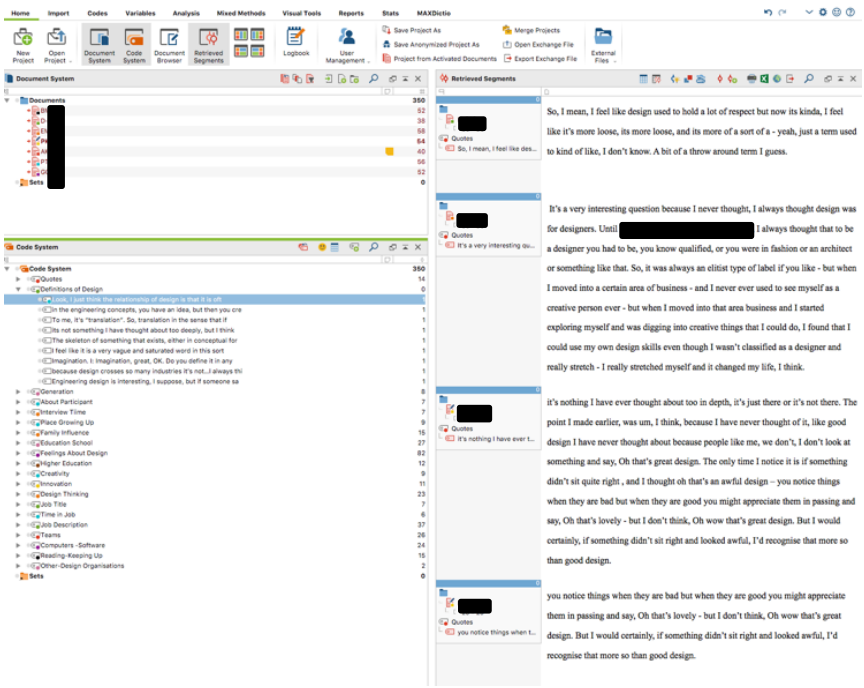


The In-Vivo code saved automatically to a Code System. It appeared in the lower left of the software window. It was not necessary to limit the word count during this first cycle; therefore, many of the First Cycle In-Vivo Coding sections consisted of large text blocks.

Folder options in the Code System panel helped manage and group all the In-Vivo codes Saldaña (2013). Figure 16 is a screenshot of the *MAXQDA18 Analytics Pro* software interface. The top left of the *Document System* panel shows a file for each of the transcripts and open transcript and In-Vivo codes applied. The Code System panel on the bottom left shows the initial folders that contain the saved In-Vivo codes.

Figure 16

MAXQDA18 Analytics Pro interface with In-Vivo Codes



4.4.5 *First Cycle In-Vivo Coding – Second Pass*

The initial, First Cycle In-Vivo Coding – First Pass results were, as predicted by Braun and Clarke (2006), "a long list of different codes…identified across [the] dataset" (p.19). Thus, to further reduce the data towards a shorter code summary, the cycle was repeated a second time (Saldaña, 2013).

The purpose of a second pass was to review the codes so that critical points responding to the interview questions could emerge.

Saldaña (2013) recommends presenting In-Vivo codes in their entirety. Hence, the method used to reduce the data into themes is as transparent as possible. Therefore, In-Vivo codes, from the *First Cycle In-Vivo Coding – Second Pass* results, are available under Appendix D. The following section presents the data reduction results.

4.4.6 *Second Cycle Coding*

The *Second Cycle Coding* method produced five themes for *Design* meaning that resulted from grouping and overlapping the coded summaries displayed in Appendix C.

The five themes are, in alphabetical order:

1. *Design Confusion*: the meaning of *Design* or *Design* related concepts that seem confusing or vague for people.
2. *Design Frustration*: feeling a sense of frustration that *Design* or *Design* related concepts are not generally respected.
3. *Design Ingenuity*: the unlimited possibilities and creative ability of human imagination.
4. *Design Manifestation*: an outcome or realisation of something, real or imagined; a manifestation expressed.
5. *Design Translation*: ideas, views or things, translated and interpreted to enable shared understanding.

The data from all participants contributed to the five themes. Table 16 provides an overview of the participant's gender, age group and job titles.

Table 16

Participants, Gender, Age, Job Title

Participant	Gender	Age Group	Job Title
P1	Female	25 - 35 yrs.	Project Development Coordinator, Engineering
P2	Female	25 - 35 yrs.	Client Liaison Officer
P3	Male	25 - 35 yrs.	Content and Digital Manager
P4	Female	50 – 60 yrs.	Manager, Wholesale Jewellery Manufacturing
P5	Male	25 - 35 yrs.	Director of Mortgage Broking, Finance
P6	Female	50 – 60 yrs.	Craft Blogger
P7	Male	25 - 35 yrs.	Design Sprint Coach, Consultant

Each participant was assigned a code (far left column) at the beginning of the study.

In the following, Table 17 shows how all seven of the participants contributed to the theme *Design Confusion* and six to *Design Translation*. In contrast, two responses formed *Design Frustration*. The participants whose responses aligned with a theme appear in the far-right column in the theme row.

Table 17

Design Meaning Themes

Theme	Description	Participant Contributions
Design Confusion	The meaning of *Design* or *Design* related concepts that seem confusing or vague for people.	P1, P2, P3, P4, P5, P6, P7
Design Frustration	Feeling a sense of frustration that *Design* or *Design* related concepts are not generally respected.	P3, P7
Design Ingenuity	The unlimited possibilities and creative ability of human imagination.	P1, P2, P3, P4, P5
Design Manifestation	An outcome or realisation of something, real or imagined; a manifestation expressed.	P1, P2, P3, P4, P6
Design Translation	Ideas, views or things, translated and interpreted to enable shared understanding.	P1, P2, P3, P4, P5, P7

The following sections show each theme separately and include the individual response of the participants relevant to that theme.

4.4.7 *Design Confusion*

The meaning of *Design* for this theme was one of confusion or frustration. All seven participants expressed some level of uncertainty towards or had experience interacting with people who found *Design*, *Design Thinking* or *Innovation* confusing. Table 18 shows the Second Cycle Codes that contributed to *Design Confusion*.

Table 18

Design Meaning Theme: Design Confusion

Design Confusion	The meaning of Design or design related concepts that seem confusing or vague for people.
	Second Cycle Codes
P1	*Design* is confusing. No feelings towards it.
	I have never heard of *Design Thinking*. Guess it is some mode of thought of trying to creatively and innovatively solve issues rather than business issue and practices.
P2	I have heard of *Design Thinking*, but I haven't personally used the term.
P3	*Design Thinking* is not common unless you are in a certain type of workplace. It is around me, but I don't preach it.

Design Confusion	The meaning of Design or design related concepts that seem confusing or vague for people.
P4	I have heard of *Design Thinking* but don't use the term. I am not sure I fully understand it.
P5	I switch off to the word *Design*. It is not relevant to me.
	Innovation doesn't mean anything to me.
P6	People like me don't think about *Design*, unless it is bad.
	Haven't thought about *Design*. Probably, art, sculpture, letterhead, logo.
	I have never heard of *Design Thinking*.
	Not thought about innovation much. [I think] it would be leaders at the front of the pack.
P7	I use *Design Thinking* because people love the term in the corporate world. It is the new term for innovation. *Design Thinking* sounds more edgy, original and creative but it is the same principle as innovation. People are more pre-disposed to the term if they have had exposure to *Design*.

Participant P1, a Project Development Coordinator in Engineering, said she was confused about *Design* and had no feelings towards it one way or the other. P1 had never heard of *Design Thinking*.

Similarly, P2, a Client Liaison Officer, and P4, the Manager of a Jewellery Manufacturing company, had heard of the term *Design Thinking*, but neither of them used the term. P4 admitted she did not understand what *Design Thinking* meant. Although P3, a Content and Digital Manager, worked with *Design Thinking*, he felt it was only relevant in specific workplace situations.

P5, a Director of Mortgage Broking in Finance, could not relate to *Design* at all. He said, "it's an automatic switch off." Furthermore, P5 had never heard of *Design Thinking* and also felt innovation had no meaning for him. In a similar vein, P6, a Craft Blogger, claimed that "People like me don't think about *Design* unless it is bad". When asked for a definition, P6 responded with, "Haven't thought about it. Probably, art, sculpture, letterhead, logo". P6 was equally reserved about a definition for innovation.

P7, a *Design* Sprint Coach and Consultant, was the only participant who used the term *Design Thinking.* He described it as "the new term for innovation. *Design Thinking* sounds more edgy, original and creative, but it is the same principle as innovation. People are more pre-disposed to the term if they have had exposure to *Design*".

4.4.8 *Design Frustration*

Two participants were very definite in their responses to questions about *Design* meaning. Their answers led to this theme. Table 19 shows the Second Cycle codes that contributed to the theme *Design Frustration*.

Table 19

Design Meaning Theme: Design Frustration

Design Frustration	**Feeling a sense of frustration that Design or Design related concepts are not generally respected.**
	Second Cycle Codes
P3	*Design* is no longer respected. An overused, throw around term. Innovation is a buzz word. I am immune to the whole innovation world.
P7	Good *Design* is invisible. I am frustrated by people thinking *Design* is only abstract, art and colours. In business, innovation is a replacement word for creativity and ideas, because it sounds more commercially responsible. Every human being on the planet is naturally creative. When someone says, "I am not creative" the question is, why, by what rules?

P3 was the only participant in Study One with *Design* qualifications. He felt *Design* was once respected but was currently a "very vague and saturated word … a bit of a throw around term" (Archer,1979; Buchanan, 1985; Paolini, 2015).

P3 also claimed, for him, innovation was a "buzzword" and he was "immune to the whole innovation world." P3 watched businesses with some amusement because they seemed to apply the word innovation to anything and everything to raise their public profile.

Similarly, participant P7 expressed frustration with people who still think *Design* is "woo-woo'" (Courtney, 2013; Michlewski, 2008; Montgomery, 2013).

P7 felt that businesses used the word innovation as "a replacement word for creativity and ideas because it sounds more commercially responsible". For P7, every human being on the planet is naturally creative. He argued that when someone says, "I am not creative", the question should be, "why, by what rules?".

4.4.9 *Design Ingenuity*

In this theme, the word ingenuity represented inventiveness, imagination, creativity, originality and innovation. The description for *Design Ingenuity* responds to the unlimited possibilities and creative ability of human imagination. Table 20 presents Second Cycle codes under the theme of *Design Ingenuity.*

Table 20

Second Cycle Coding Theme: Design Ingenuity

Design Ingenuity	**The unlimited possibilities and creative ability of human imagination.**
	Second Cycle Codes
P1	Creativity is associated with *Design*.
P2	Creativity is a mindset and a thought process that can't be measured. It is lateral thinking, open-mindedness and ability. One picture that looks better than another picture doesn't measure creativity it just means the creator is more skilled. Innovation is a strategy and thought process of pushing something to its next level. A conscious strategy to take something and push it outside of its box.
P3	Creativity is always going to be around. It is a feeling that people possess whether they use it or not. Very debatable. There are people who create that aren't necessarily creative.
P4	Creativity is a hard one. [It is] looking at things from different angles, different perspectives. Something blue turned upside down or thrown in a different light might be yellow. [Creativity is seeing] something within a form, that becomes a different form. I don't know how to explain that properly. Innovation is left of centre, forward thinking. It's something that hasn't been done before in that particular way. If something is innovative, it's looked at from a completely different perspective.
P5	*Design* is imagination and individuality. Creativity is something that is unique and genuine and something you have just thought about.

P1 associated creativity with *Design*, but she was hesitant to elaborate further. P2 felt that creativity was a mindset and a thought process that involved lateral thinking, open-mindedness and ability (Department of Trade and Industry, 2005; HM Treasury, Cox Review, 2005). P2 perceived innovation as a conscious strategy to take something and push it outside of its box.

P3 felt creativity was always going to be around as it was a feeling that people possess whether they use it or not. Although, he noted, "there are people who create who are not necessarily creative". P4 defined both creativity and innovation as

"something … looked at from a completely different perspective." Similarly, P5 felt that creativity was "unique thoughts" about something.

4.4.10 *Design Manifestation*

The theme *Design Manifestation* referred to an outcome or realisation of something, real or imagined, a manifestation expressed. Five of the participants contributed to this theme and their Second Cycle codes shown in Table 21.

Table 21

Second Cycle Coding Theme: Design Manifestation

Design Manifestation	**An outcome or realisation of something, real or imagined; a manifestation expressed.**
	Second Cycle Codes
P1	The term *Design* and designer are used heavily and extensively within engineering. It starts with an idea, then a concept *Design* to detailed *Design*, system architectures and details of the individual components. The detailed *Design* process is how the components work together and the operational outcomes etc. The vast majority of innovation in engineering *Design* is around business processes, or organisational processes and procedures. Innovation attempts to make things more efficient.
P2	*Design* is cross-disciplinary. I associate *Design* with product or graphic design. It is manipulation of all that you know.
P3	*Design* means somebody with creative sight can put forward their vision and manifest what's in their mind.
P4	*Design* is the skeleton of something [either] in conceptual form or solid form. It can be around an idea or a solid object. The thread. The bones of something, conceptual, or real. When I realised *Design* was not just for elitist professionals and started using my own *Design* skills – it changed my life.
P6	Creative people who come up with new ideas, arty people who make or *Design* things. It can be in their heads or with hands, manual creativity, [such as] sculpture and woodwork. Creativity covers a broad range. I don't call it work because I enjoy it. I *Design* [cutting machine] files and give them away on my niche blog.

Although P1 had previously said she was confused by *Design*, she was also familiar with *Design* through her work. She said the term *Design* and designer were used "heavily and extensively within engineering". She described the process as starting "with an idea, then a concept *Design* to detailed *Design*, system architectures and details of the individual components. The detailed *Design* process is how the components work together and the operational outcomes etc.".

Likewise, P1 said, innovation in *Engineering* referred to business processes or organisational processes and procedures. Thus, for engineering, the meaning of innovation was extending efficiency.

P2 saw *Design* in a cross-disciplinary context, "I associate *Design* with product or graphic *Design*, but it is manipulation of all that you know."

P3 defined *Design* as "somebody with creative sight who can put forward their vision and manifest what's in their mind." He believed "technically everything is designed in some way or form" (Simon, 1996).

P4 felt *Design* was "the skeleton of something … an idea or a solid object. The thread. The bones of something, conceptual, or real." P4 stated, "when I realised *Design* was not just for elitist professionals and started using my own *Design* skills – it changed my life".

P6, who also sits under the 'enabled amateur' category, said, "I *Design* [cutting machine] files and give them away on my niche blog. She described creativity as "Creative people [who] come up with new ideas, arty people who make or *Design* things. It can be in their heads or with hands, manual creativity, [such as] sculpture and woodwork. Creativity covers a broad range".

4.4.11 *Design Translation*

Six of the seven participants contributed to the theme *Design Translation*. The Second Cycle codes for this theme provided valuable insights into how the participants communicate in their professional lives. See Table 22.

Table 22

Second Cycle Coding Theme: Design Translation

Design Translation	Ideas, views or things, translated and interpreted, to enable shared understanding.
	Second Cycle Codes
P1	I am a project manager in engineering *Design*. I am not the designer. We provide detailed *Design* and specific construction information to be actioned by other groups. My current role has a team, though we have separate projects. We have stakeholders who provide expertise as required. Teams are fine in engineering. Mistakes cause safety hazards, cost time and money on major projects. We ensure requirements and styles are understood, so everyone is on the same page. It is interesting to match expectations with outputs of engineering *Design* drafters. Tracers will draw what they are given. Write 'check this' and they will write 'check this' and not check it.
P2	I prefer teams, especially with *Design* and creativity. One person can't achieve the same sort of things as a team. Freelancers do, but teams are better for strategies and rollouts. A bad team example is when designers don't see eye to eye or are not willing to compromise. More challenging with external teams not internal.
P3	I work in a multifaceted, creative role that includes designing and general art direction of other creatives. Multiple people can be a case of too many cooks in the kitchen. Disagreements and also the opposite happen. It depends on the people who form the team and the individuals within those teams. Some teams synchronise, learn and inspire each other so the end product is a better result. But I also like to work by myself and be in control of the output. Having a team depends on how you structure it. Multiple people who have multiple skills is better than trying to teach yourself all the different skills.
P4	I now work in an office environment. I work with *Design* in all of my three jobs, for instance marketing of the business. Not obviously but using the principles of *Design* every day. Teams can be challenging … if people are on different wavelengths. People with different perspectives help you to grow. The baby boomer generation has challenges taking on new technology or new ideas. We must teach ourselves to be adaptable, everything is always changing, always moving. Collaboration has shown me that just because you used to do it a certain way doesn't mean you do anymore. We've got to keep learning, re-learning, coming back in from different ideas. You need a reality check all the time.
P5	At work I enjoy designing information packages, collating and then translating options for clients specifically tailored to their needs. It is autonomous and mentally engaging work. No day is the same. Good team collaborations are when everybody is willing to help or giving an honest 'no' if they can't. I haven't come across any bad team collaborations in the finance field. It is purely down to mutual respect, no fighting just working towards "let's get it done".
P7	*Design* is translation. If you want people to think, understand or do, [you] must translate that into a language they understand and that empowers them to do it. A designer helps you understand information. I am self-employed. I consult for top 500 publicly listed companies through to start-ups. I offer problem solving to multi-disciplinary groups of people [made up of] designers, marketers, businesspeople, customer service, engineers,

Design Translation	Ideas, views or things, translated and interpreted, to enable shared understanding.
	product managers and C level. I design sprint coaching. I have always done this work just under the label of UX designer. I go into companies and their teams when something is not working, when there is a sense of helplessness, pointing of fingers and not knowing what to do next. Often a cultural issue. There are no good or bad teams. Everyone has a strong suit, but people tend to solve things in silos.
P7	Designers complain about engineers, engineers complain about designers and always complain about MBA's, even when they are all on the same team to solve the same problem. They need to work together. One person will be the most vocal. Businesspeople are most vocal with marketers and designers. If not business, designers. There is always a dominant alpha who steamrolls others. If the CEO is an engineer and developed the company culture around a specialty, this culture will not support others. *Design* is the enemy. A sentence that changes everything is: "*we are all designing. I solve my problems with pixels, you solve your problems with code, and he solves his problem with words. And we're all designers*."

P1 stated that "Teams can be challenging … if people are on different wavelengths [then], we ensure requirements and styles are understood, so everyone is on the same page".

Likewise, P2 did not explicitly state the word translation. However, her response inferred that translation was necessary, "A bad team example is when designers don't see eye to eye or are not willing to compromise".

P3 noted the challenges that arise in teamwork and leading, "other creatives." P3 said, "it depends on the people who form the team and the individuals within those teams. Some teams synchronise, learn and inspire each other, so the end product is a better result".

Translation for P4 was the chance to think differently by collaborating with different people.

P5 said, "At work, I enjoy designing information packages, collating and then translating options for clients specifically tailored to their needs". P5, however, previously stated that "I switch off to the word *Design*. It is not relevant to me". It seems P5 did not connect *Design* with "designing information packages".

Participant P7 explicitly stated that "*Design* is translation", thus inspiring the name of the theme. P7 felt a company's acceptance of *Design* was related to its culture, resulting from attitudes in the C-suite and interdisciplinary breakdowns in communication caused by people working in 'silos'.

4.5 Summary

Study One was a qualitative examination of how professionals in *Design* and professionals in business understood the meaning of *Design* through their professional interactions.

The data, derived from seven interviews, represented the meaning of *Design* with people from diverse work backgrounds.

Examination of the data involved two passes of *First Cycle In-Vivo Coding* (Saldaña, 2013). Subsequent coding involved the *Second Cycle Coding process*, which identified patterns and overlapping themes in the coded data (Saldaña, 2013; Kuckartz, 2019).

Five themes emerged from the interview data, in alphabetical order:

1. *Design Confusion.*
2. *Design Frustration.*
3. *Design Ingenuity.*
4. *Design Manifestation.*
5. *Design Translation.*

The results show that the meaning of *Design* was individual and determined by a person's social experiences and interest in the topic (Blumer, 1969). All seven participants contributed to more than one theme. Thus, the meaning of *Design* can have multiple implications for a single person.

In particular, a person's spoken definition of *Design* was not necessarily a representation of their feelings towards it. Thus, their answers to the interview questions could have contributed to more than one theme (Blumer, 1969).

For instance, one participant said, "*Design* is confusing. [I have] no feelings towards it". Nevertheless, the same participant also stated that, at her work, "I am

not the designer. We provide detailed *Design* and specific construction information to be actioned by other groups".

Furthermore, a person may unconsciously talk about *Design* while at the same time does not understand it. For example, another participant said, "I switch off to the word *Design*. It is not relevant to me" also said, "At work, I enjoy designing information packages".

The two participants who contributed to the theme *Design Frustration* both worked in a professional capacity with *Design*. These same two professionals were the only two participants familiar with *Design Thinking* and, in the same vein, both defined innovation as a corporate "buzzword".

A majority of the participants were either unsure or had never heard of *Design Thinking*.

Although all participants answered a question about creativity, one person did find a meaning hard to articulate. Innovation did not mean anything to two of the seven participants. A majority, six of the seven participants, recognised the significance of shared communication in teamwork.

Further interpretation of Study One results occur in Chapter 7: Synthesis and Discussion. The following Chapter 5 explains data collection and results for Study Two.

Chapter 5: **Study Two *Writing Design***

Chapter 5: Writing *Design* covers the method and results for Study Two. It was a quantitative content analysis of three professional journals to examine how they communicated a view of *Design* through their selection of published articles. Underpinning Study Two were two questions:

1. How do editors of publications communicate a view of *Design* and business through the articles they select for publication, and
2. How do authors write about *Design* in their published articles?

The method examined the use of *Design* in three journals, which consisted of one academic business journal, one academic *Design* journal and one professional business publication. The longitudinal timeframe was January 2000 to December 2017, a total of 18 years. The study applied a systematic review of manifest content that examined the use of *Design* in the titles, abstracts and keywords of the journal articles.

The following information explains the selection process for the three publications (5.1), the timeline (5.2), the data selection process (5.3), the final sample selection from a census of articles (5.4) and the results (5.5).

5.1 Selecting Publications for Content Analysis

There are three categories usually associated with professional publications. These categories are academic scholarly journals, trade publications and magazines.

Academic journals publish concentrated, detailed and original research by authors who are usually associated with a university or expert in their field. The writing is referenced and includes a bibliography. An editorial board made up of experts is responsible for managing the article submissions and peer-reviewed evaluation. To be accepted for academic journal publication, the article should add value to its area (Elsevier, n.d.; EBSCO Connect, 2018).

Articles in professional trade publications focus on specific industries or disciplines. These articles involve up-to-date information, trends and research by

authors who are considered industry professionals. An industry editor reviews the papers for publication (EBSCO Connect, 2018).

In contrast, magazines publish medium or short length articles for the public. A general editor selects articles for the magazine, usually on topics that offer information and opinion pieces around specific themes. Magazines typically publish more frequently than academic journals or professional trade periodicals (EBSCO Connect, 2018)

Academic journals offer research benefits such as credibility, clarity of information and evidence of claims (APIAR-Blog, 2017). Thus, academic journals in *Design* and business were the professional publication category for content analysis in Study Two.

5.1.1 *Journal Ranking*

A journal's ranking or impact factor is a classification of its importance to a field based on the quality and value of its published information (Liebowitz & Palmer, 1984). There are five different freely available measures of journal rankings.

CiteScore metrics calculate citation averages for publications based on abstract and citation data retrieved from the Scopus database (Elsevier, n.d.b).

Journal Citation Reports (JCR), also average the citations associated with a publication. However, it uses an algorithm by *Clarivate Analytics* (Elsevier, n.d.b).

SCImago (SJR) provides both quantitative and qualitative measures of a journal's ranking, as well as the level of its prestige. The evaluation standards were developed from the *Scopus*® database using *Google PageRank*™ (Elsevier, n.d.b; SCImago, n.d.).

Source Normalised Impact per Paper (SNIP) is one of the few metrics that compare different journal disciplines. It measures "*contextual* citation impact … of journals in different subject fields" (Elsevier, n.d.b, para. 8). Initially, the *h-index* was an "author-level metric" that over time has had "numerous variants" and become a distinction for high-ranking journals (Elsevier, n.d.b, para. 10).

Additionally, *Google Scholar Metrics* provide a list of top publications based on variants of *h-index* metrics (Google Scholar, n.d.).

5.1.2 *Journal Selection*

The purpose of Study Two was to examine the meaning of *Design* from the perspective of the professional author in business and the professional author in *Design*. To that end, the three publications selected represented three professional categories:

1. *Academy of Management Journal* (AMJ) publishes articles relevant to management scholars.
2. *Design Studies (DS)* publishes articles on cross-disciplinary *Design* topics.
3. *Harvard Business Review* (HBR) publishes business articles as a magazine-style journal with a broad public and professional readership.

Table 23 summarises the purpose and target readership of each of the selected journals. A description of each journal follows Table 23.

Table 23

Journals Selected for Content Analysis of Design

Publication	About / Purpose	Readers
Academy of Management Journal (AMJ)	AMJ is a leading academic, peer-reviewed journal primarily for management scholars. The New York Times, Washington Post and Business Week amoung others regularly cite AMJ.	Business Professionals, Academic
Design Studies (DS)	DS is a leading, peer-reviewed, academic journal for the study of design activity. The publication presents design from all domains in order to reach researchers, teachers and practitioners.	Design Professionals, Academic
Harvard Business Review (HBR)	HBR is a respected publication that presents business and management topics that have wide reaching appeal.	Business Professionals, Academics and General Public

5.1.3 *Academy of Management Journal (AMJ)*

The first publication selected for Study Two was the *Academy of Management Journal* (AMJ). AMJ has an established history and frequently appears near the top of searches for business and management journals.

Furthermore, *The New York Times, The Economist, The Wall Street Journal* and other professional periodicals regularly cite research published in AMJ. The journal also has strong associations with the *Academy of Management Association,* which has over 20,000 members from more than 120 countries (Academy of Management, n.d.).

AMJ had a *CiteScore* of 7.44 for 2017 and 10.36 for 2018. In 2017, the journal boasted citations for 96% of its articles and 100% for 2018.

AMJ was listed second of 195 publications under *General Business, Management and Accounting* (Scopus, n.d.). On the SJR website, 322 journals of a possible 34,627 appeared under the search category of *Business, Management and Accounting.* AMJ was number seven for both 2017 and 2018. The Academy of Management, United States of America, manage the journal, which they first published in 1975. At present, issues are released six times per year in February, April, June, August, October, and December.

The journal aims to publish empirical research articles that contribute to building business and management theory and professional practices for management scholars. An article selected for publication must be relevant to management and organizational practice and pass Editor selection and peer-review processing. There is an expectation that published authors will contribute to the peer review process in return for publication. The journal is proud of its diverse editorial team members (Academy of Management, n.d.).

For Study Two, the *Academy of Management Journal* (AMJ) represented professionals in business.

5.1.4 *Design Studies (DS)*

The second journal is representative of professionals in *Design*. A study conducted by Gemser, DeBont, Hekkert and Friedman (2012) examined the perceptions of *Design* academics towards *Design* journals. Rather than ranking scores, the study results reflected scholarly opinions of the journals.

Their study revealed that the most influential journal for *Design* professionals was *Design Studies,* closely followed by *Design Issues.*

On the SJR website, there was no classification for *Design*. An exploratory search for *Design*, without a search classification, returned 1059 journal names, many of which were not relevant to *Design*. Under the classification of *Arts and Humanities,* which returned a list of 415 journals, *Design Studies: The Interdisciplinary Journal of Design Research* appeared at number 70 and *Design Issues* at 157.

In contrast, a search of the Scopus database revealed that DS was the number one journal under *Architecture*.

Published by Elsevier Ltd., *Design Studies* (DS) was initially released in 1974 and currently publishes six issues per year: January, March, May, July, September and November.

DS has a readership of professionals associated with a wide range of *Design* fields and academics involved in *Design* research. The journal publishes in collaboration with the non-profit *Design Research Society* (DRS). DS provides a forum for "the analysis, development and discussion of fundamental aspects of *Design* activity, from cognition and methodology to values and philosophy" (Design Studies, n.d., para 1).

The social structure of DS is similar to AMJ in that those submitted articles undergo a double-blind peer review before final approval by the editor. Emeritus Editor-in-Chief of the journal Nigel Cross is a respected British academic, *Design* researcher and author of well-known books such as *Designerly Ways of Knowing* (Cross, 2006) and *Design Thinking* (Cross, 2011). A significant focus of the journal is to develop an understanding of *Design* methods "across all domains of application, including engineering, product *Design*, architectural and urban *Design*, computer artefacts and systems *Design*" (Elsevier, n.d.a, para.1).

Design Studies (DS) was selected as the journal to represent *Design* professionals in Study Two.

5.1.5 *Harvard Business Review (HBR)*

The third publication, *Harvard Business Review* (HBR), reflected a general business perspective while still maintaining a level of prestige similar to the two other publications in the study.

HBR has an extensive readership of business professionals, academics and the general public. The HBR journal's philosophy is to positively impact professional leaders worldwide through their articles around business management.

Harvard University owns the current not-for-profit Harvard Business School Publishing body that founded the Harvard Business Review in 1922. The journal's mission is "to improve the practice of management in a changing world" (Harvard Business Review, n.d., para. 1).

Scopus and SJR both define *Harvard Business Review* as an academic journal. However, Wilkinson (2016) from *The Oxford Review* has criticised *Harvard Business Review* for not publishing original research. It seems the criticism also stems from the lack of a peer-review process for HBR article submissions. To be published in the HBR publication, the authors work with a features editor who provides them with feedback.

Nevertheless, for Study Two, *Harvard Business Review* offered a bridge between scientific, academic research and writing for general business professionals while maintaining an academic association. Thus, the third journal chosen for this study was the *Harvard Business Review* (HBR).

5.2 Study Two Timeline

The timeline for Study Two was January 2000 to December 2017, a total of 18 years. The year 2000 was a subjective choice based on the beginning of a new century and a new millennium.

According to the *New Media Institute, Inc.* and their History of the Internet, the year 2000 was defined by "the rise and burst of the Internet bubble" (New Media Institute, 2018, para. 32). In 2000, the Internet was version 1.0, Google was 15 months old and Facebook did not exist. Thus, the 18-year period was an opportunity to examine *Design* in publications over a timeline of significant technological change.

5.2.1 *Sample Frame*

The sample frame for Study Two was a census of articles for each publication across the timeframe.

AMJ produced six volumes for most years. In total, AMJ published *N*=91 volumes comprising of *N*=1386 articles between January 2000 and December 2017. DS published *N*=110 volumes and *N*=790 articles between January 2000 and December 2017 with a publication schedule of six or seven volumes per year. HBR circulated an average of ten volumes per year. The HBR journal published a total of *N*=183 volumes that included *N*=5495 written articles. An average of 30 articles per volume.

The total sample frame for Study Two was N=402 issues consisting of N=7671 written articles across three professional publications and an 18-year timeframe.

Table 24 shows details of the sample frame for each publication. It includes the number of volumes and the total number of articles for each publication between January 2000 and December 2017.

Table 24

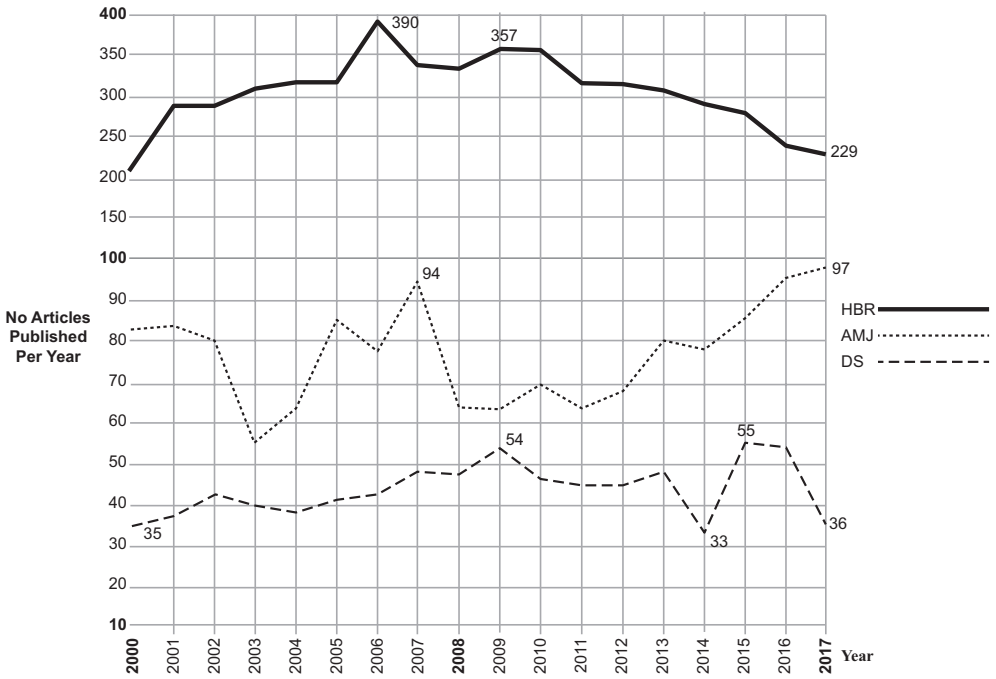
Census for AMJ, DS and HBR, January 2000 to December 2017

Journal	Vol (N=)	Articles (N=)
AMJ	109	1,386
DS	110	790
HBR	183	5,495
Census	402	7,671

Figure 17, below, is a graphic representation of the articles produced by each publication for each year of the timeframe. The left-hand vertical column represents the census number of articles published. The dotted line represents AMJ, the dashed line is DS and the thick continuous black line is HBR. The years sit along the base of the figure. The diagram shows that, over the timeframe, the most prolific number of articles published was by HBR in 2006 (N=390) and the least by DS in 2014 (N=33).

Figure 17

Census of Articles Published by AMJ, DS & HBR



The census of articles published yearly for each publication between January 2000 to December 2017.

The following section (5.3) describes the data collection process for Study Two.

5.3 Data Collection Process

Bond University Library provides access to each of the three journals and a census of articles for each year of the timeline. The database for AMJ and HBR was *EBSCOhost: Business Source Complete* and for DS, the *Science Direct* database.

Initially, the article references, along with abstracts and keywords, were exported from their associated databases directly to the bibliographic software *EndNoteX8*. The plan was to export bulk numbers of articles from their respective databases and sort them into folders after import into *EndNoteX8.*

However, this export strategy became unwieldy with such a large number of articles (N= 7,671). Moreover, the software supports only a two-folder deep structure. It was impossible to automate the placement of so many references into two folders.

On import into *EndNoteX8*, the sample became a long list of references. To manually separate the references into folders was a time consuming and laborious process.

Eventually, the researcher determined that the most effective process was to export the references in smaller numbers into numerous premade folders within *EndNoteX8.* See Figure 18.

Figure 18

Example of the Folder Structure in EndNoteX8

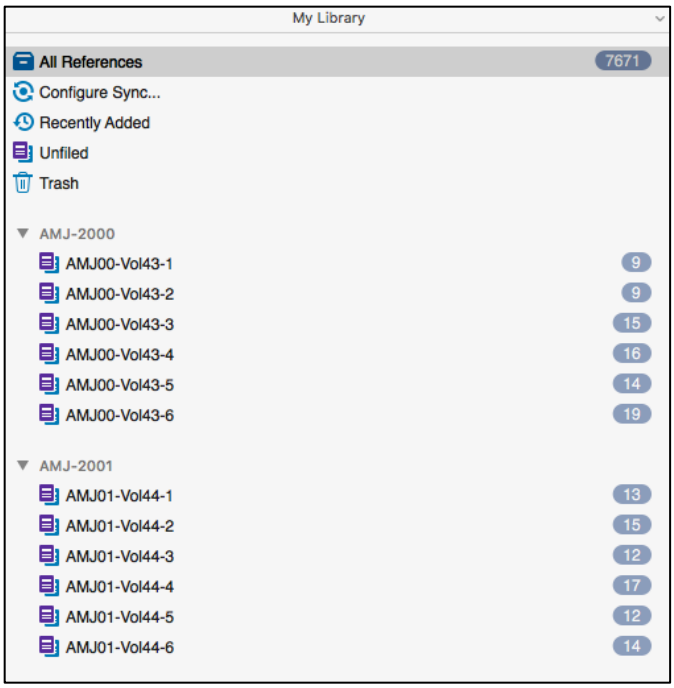


Figure 18 shows the *EndNoteX8 r*eference panel for the sample (N=7,671) and the main folders for AMJ-2000 and AMJ-2001, which contain the subfolders for the volumes they published for that year. The numbers on the right of the folders are the number of articles for that issue.

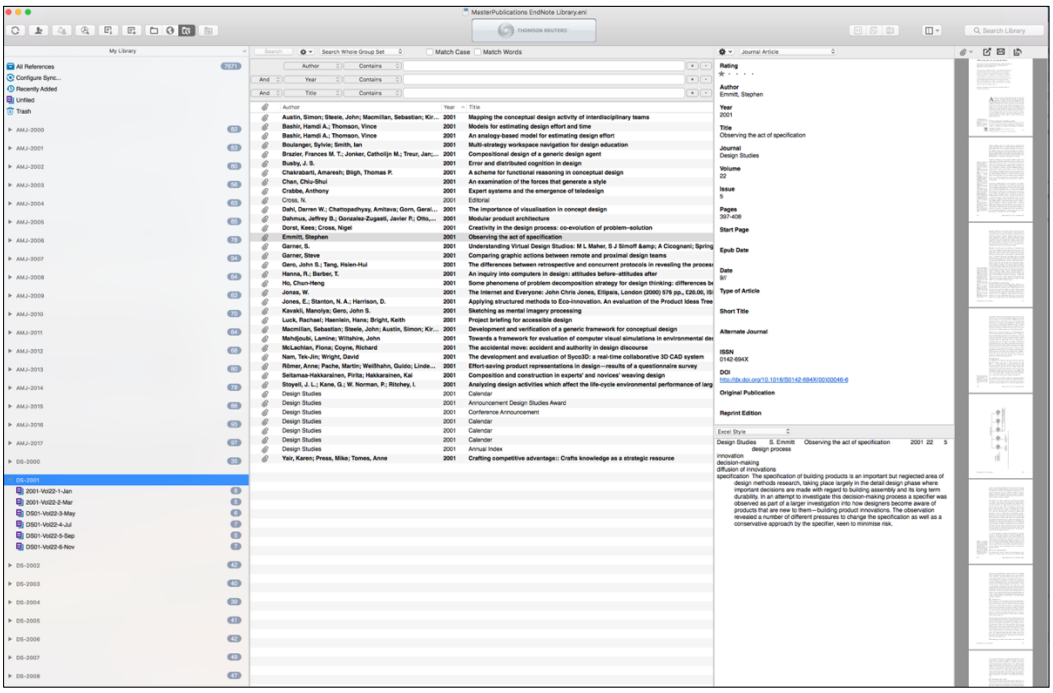
The result was a folder structure that consisted of one main folder named for a journal and a given year, for instance, AMJ-2000, AMJ-2001 and AMJ-2002. Inside that folder was a set of folders, one for each issue published by the journal for that year. Each journal had 18 folders representing a year of the study.

The total was 54 yearly folders in the reference panel of *EndnoteX8*. Inside the yearly folders were various numbers of folders representing the journal's volumes. These contained the published articles.

Figure 19 shows a screen view of the folder structure within the bibliographic software *EndNoteX8.* In the left side panel, the journals yearly folders expand to show a list of folders for the volumes for that year. The corresponding number is the number of published articles for that volume.

Figure 19

EndNoteX8 Window and File Structure of References



The folder structure is on the left, the list of references is in the middle panel and detailed abstracts and other information are on the right-side panel.

5.4 Census to Sample – Determining Units of Analysis

Each journal volume included original articles, known as "primary" or featured articles (Natividad Beltrán del Río, 2016, p.44). Non-primary materials were book reviews, conversational interviews, letters to the editor or calendar information. In determining the units for analysis, the researcher was aware that the robustness and consistency of the final sample were crucial to maintaining value for Study Two (Neuendorf, 2017).

However, it was also clear that unnecessary or non-primary articles could also impact the findings, so they were excluded (Natividad Beltrán del Río, 2016).

The review started with HBR as it published more articles (N=5495) than the other two journals. For each volume, HBR publishes an *Executive Summary* document containing a brief synopsis of the original articles in that issue. Thus, the HBR *Executive Summaries* became the benchmark for article inclusion and exclusion. The items removed from HBR became the removal criteria for AMJ and DS.

However, three issues with using the *Executive Summaries* emerged:

1. The HBR *Executive Summaries* were not published between January 2009 to July 2009. However, HBR reinstated them after six months due to public demand.

During these six months, the researcher manually checked each issue and article to assess the relevant inclusions.

2. The HBR *Executive Summaries* did not have the same inclusions over the timeline. For example, a changeover of editors usually meant changes made to the *Executive Summary*, such as removing book reviews and case studies.

As a result, all book reviews and case studies were removed from the HBR sample and subsequently from AMJ and DS.

3. Article titles in the *Executive Summaries* did not always correspond to the file names of the article's digital version. In particular, "Conversations with…" was a heading used by HBR Editors to identify interviews with different people. Nevertheless, the item on the database may have the title of the topic or the subject's name.

Once noted, these inconsistencies necessitated checking the file names with the article titles, which was a time-consuming process. However, an ongoing benefit was, as with Study One, the researcher became familiar with the data.

AMJ and DS publish fewer articles each year than HBR; consequently, it was more straightforward to remove non-primary items. Thus, the exclusion list for AMJ, DS and HBR included letters from the editor, data policy information, calendar and submission and research guidelines.

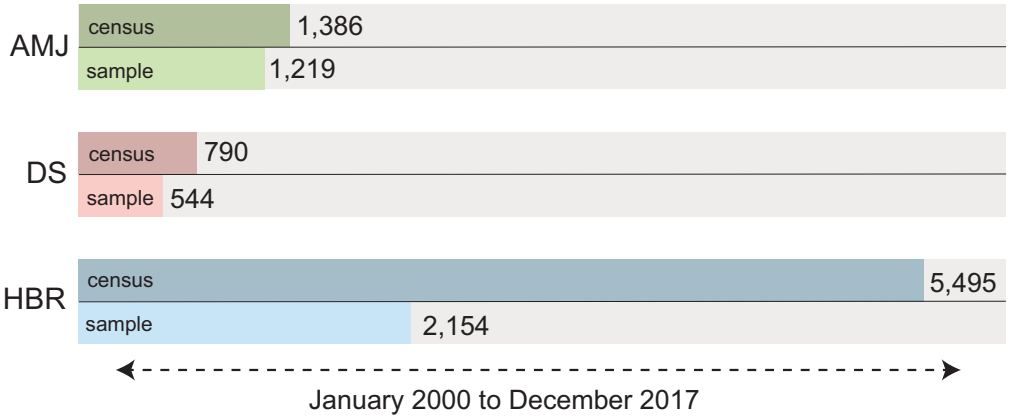
The researcher was conscious of making sure to back up all data, so she created a duplicate of the original data in *EndNoteX8* before removing any items from the publications. After removal of excluded items, the sample results were:

1. AMJ: 167 non-relevant articles removed from a census of N=1,386 creating n=1,219 units of analysis.
2. DS: 246 non-relevant articles removed from a census of N=790, resulting in units of analysis of n=544.
3. HBR: 3,917 non-relevant articles removed from a census of N=5,495 items resulting in n=2,154 units of analysis.

Figure 20 compares the census of articles and the remaining sample size (units of analysis) for each journal between January 2000 and December 2017.

Figure 20

Units of Analysis, Census and Sample for AMJ, DS and HBR



The total sample size for Study Two was n=3,917. The process of exporting the data from *EndNoteX8* to the analytical *software MAXQDA18 Analytics Pro* to undertake the analysis follows in 5.4.1.

5.4.1 *Data Export: EndNoteX8 to MAXQDA18 to Microsoft Excel.*

The software *MAXQDA18 Analytics Pro* is compatible with any bibliographic software, such as *EndNoteX8*, that supports the RIS standard. The RIS file format is:

> a standardized tag format developed by Research Information Systems, Incorporated (the format name refers to the company) to enable citation programs to exchange data (RIS (file format) (para. 1).

By utilising the RIS format in *EndNoteX8*, the sample data (n=3,917 references) were 'tagged' or labelled under relevant fields so the data could transfer appropriately to *MAXQDA18 Analytics Pro*. For example, the RIS standardisation applied an AB tag to the article abstracts, TI to titles and KW for keywords. There was also an option for the manual application of the tags if required.

The tagged data was exported from EndNoteX8 straight into *MAXQDA18 Analytics Pro* using the *Import* > *Bibliographic Data* option in the main menu of the *MAXQDA18 Analytics Pro* main window interface.

Figure 21

MAXQDA18 Analytics Pro Data Import RIS Tags and Codes

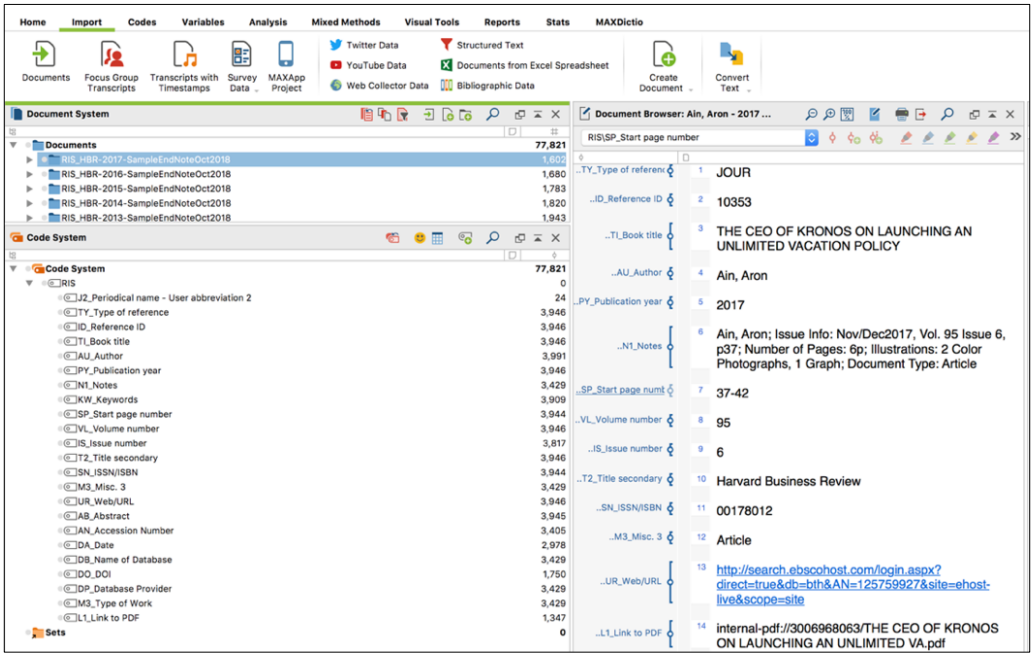


Figure 21 is a screenshot of the *MAXQDA18 Analytics Pro* interface after import of bibliographic data from *EndNoteX8*. The folders in the *Documents* panel on the top left are related to the RIS tags, which automatically create the *Code System* shown in the bottom of the figure. An article is visible in the *Document Browser* showing the predetermined codes from *Code System* assigned to the text.

Once the *Bibliographic Data* button is activated, it triggers the following steps:

1. A document group is identified with the file name beginning as RIS_.
2. All references from the RIS file are added to this document group. The entries remain in their original order.

3. A top-level code, RIS, will appear in the Code System, which will have sub-codes associated with the previously determined RIS tags, for example, AU_Author.
4. All the imported documents were automatically coded with the sub-codes from the RIS tags in the Code System.

5.4.2 *Microsoft Excel*

MAXQDA18 Analytics Pro also exports data to other software programs, such as *Microsoft Excel*, which can then export to programs such as SPSS (Statistical Package for the Social Sciences). For this study, the researcher used *Microsoft Excel* and *MAXQDA18 Analytics Pro* for the content analysis. Moreover, as the researcher had a limited subscription to the *MAXQDA18 Analytics Pro* software, *Microsoft Excel* provided a backup for the data.

Furthermore, the combined data for the three journals (n=3,917) could be exported from either *EndNoteX8* in a tab delineated format and imported into *Microsoft Excel* or exported from *MAXQDA18* Analytics Pro. Either way, an import to *Microsoft Excel* meant the data was viewable from a single spreadsheet.

In this case, the researcher chose to export the data (n=3,917) directly from *EndNoteX8* in a tab delineated format and import it directly into *Microsoft Excel*. All data had a column in the spreadsheet that contained specific information such as journal name, author information, publication date, issue, volume, title, abstract and keywords.

An initial review of the data revealed that, on import, the keywords stayed grouped in one column. It became necessary to separate them using: *Data* > *Text to Column* > *Delimited* so that each keyword had a column. Also, the journals had different ways of presenting their information. For example, AMJ always typed their article titles in capitals. DS and HBR used a mixture of upper and lower case type. Furthermore, AMJ and HBR consistently used capitalisation on the first keyword, for instance, *BUSINESS conditions*. DS, however, used only lowercase keywords, no capitals at all, for example, *design methods*.

AMJ and HBR also published a higher percentage of authors from the USA. In contrast, DS published more from the UK (Chai & Xiao, 2012).

Thus, the differences between American and British spelling also became a key consideration during word frequency searches, for example, the words ‘organization’ versus ‘organisation’.

5.4.3 *Word Frequency Searches*

The researcher made a substantial effort to ensure as much accuracy as possible during word frequency searches. Due to different spelling and the exact words using upper and lower case, it was sometimes necessary to manually check the results using specific search formulas in *Microsoft Excel*.

A general search of the document, using a lower-case word, would highlight all versions of that word such as *design*, *DESIGN*, designer, designing and designed. However, specific *Microsoft Excel* frequency formulas allowed for more accurate results as they required exact spelling. To isolate a word within a block of text (such as the abstracts), Microsoft suggested the formula:

=SUM (LEN (A2:A7)-LEN (SUBSTITUTE (A2:A7,“design”,“”)))/LEN(“design”)

As this formula was word specific, each spelling required a new frequency search.

Another Excel formula that found specific words, such as *Design,* was:

=COUNTIF (cell number, “*Design*”)

Nevertheless, the formula above seemed more susceptible to, not only, spelling differences but also spacing within the cell. For example, the same formula, shown below, has no spaces after the word range and comma:

=COUNTIF (range,“design”)

In contrast, the formula below this has space after the comma and also before the closing bracket:

=COUNTIF (range, “design”)

Consequently, these two formulas would give two different findings. Also, to ensure the accuracy of the results, the researcher used multiple checkpoints—for instance, comparing the total number of keywords with their column summaries.

Overall, frequency word searches of the information were fundamental to the results of Study Two. The occurrence of "high-frequency words" means that they "are known to more people and are processed faster than low-frequency words" (Brysbaert, Mandera, & Keuleers, 2018, p.45). The findings provided insights into the importance that journals place on these words. The results of Study Two follow under 5.5.

5.5 Study Two Results

The results for Study Two began with the word combination process (5.5.1), followed by the results for the most frequent word combinations in AMJ (5.5.2), DS (5.5.3) and HBR (5.5.4). Further analysis included a word combination comparison (5.5.5 - 5.5.6). The frequency of *Design* and *Design Thinking* in the articles' titles and abstracts (5.5.7-5.5.8). How often *Design* appeared together with the word business (5.5.9). Plus, keyword analysis for each journal (5.5.10-5.5.18). Section 5.6 provides a summary of the results for Study Two.

5.5.1 *Word Combination Frequency*

A 'word combination' tool, available in the *MAXQDA18 Analytics Pro* software, enabled an automated search of all the articles and the most commonly found word combinations. That is, the search returned the most occurrences of two or more 'word combinations' from anywhere in the sample articles. As with most automated searches, a range of software options was available.

The researcher selected the 'two to five' word search option for word combinations.

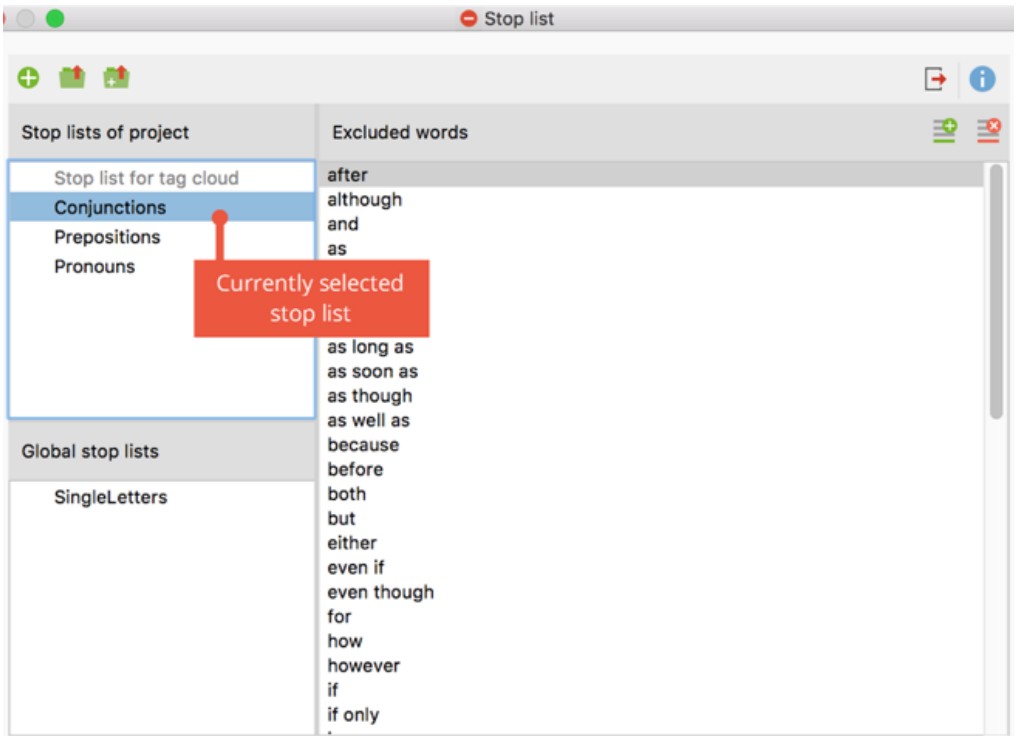
Another choice was the *Stop List*, which was a list of words excluded from the search. The *MAXQDA18 Analytics Pro* software automatically includes a predetermined *Stop List* of conjunctions, prepositions and pronouns, but these can also be manually adjusted.

The first results for the word combination search showed 'abstract' and 'author' at the top of the list for HBR. Further investigation revealed that, at the end of each HBR abstract, were the words "Abstract by Author". These words were not part of the abstracts and did not appear in AMJ or DS journal articles; thus, they became a manual addition to the *Stop List* for this study.

Other word combinations added to the *Stop List* included ‘find that’, ‘this study’, ‘show that’, ‘be much’, ‘our finding’, ‘this finding’ and ‘our result’. Redundant word testing continued until a single *Stop List* applied, without unnecessary words, for all three journals. See Figure 22 for an example list of the list of conjunctions supplied by the software.

Figure 22

Stop List Word in MAXQDA18 Analytics Pro



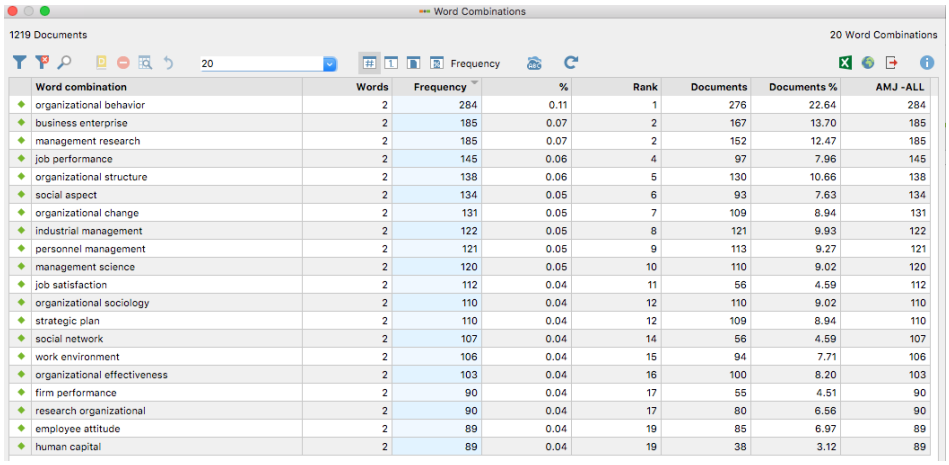
Once a search was activated, there was a software option to choose how many word combinations were displayed. The number of word combination results returned for each publication was arbitrarily limited to twenty for this study. *MAXQDA18 Analytics Pro* displayed results in a table that could be saved or exported to another software.

5.5.2 *AMJ Word Combination Results*

Figure 23 displays word combination results for AMJ. The columns show the number of words in the combination, the frequency with which they occur, percentage, rank and the number of documents.

Figure 23

AMJ top 20 most frequent word combinations



Word Combinations

1219 Documents — 20 Word Combinations

20 — Frequency

Word combination	Words	Frequency	%	Rank	Documents	Documents %	AMJ - ALL
organizational behavior	2	284	0.11	1	276	22.64	284
business enterprise	2	185	0.07	2	167	13.70	185
management research	2	185	0.07	2	152	12.47	185
job performance	2	145	0.06	4	97	7.96	145
organizational structure	2	138	0.06	5	130	10.66	138
social aspect	2	134	0.05	6	93	7.63	134
organizational change	2	131	0.05	7	109	8.94	131
industrial management	2	122	0.05	8	121	9.93	122
personnel management	2	121	0.05	9	113	9.27	121
management science	2	120	0.05	10	110	9.02	120
job satisfaction	2	112	0.04	11	56	4.59	112
organizational sociology	2	110	0.04	12	110	9.02	110
strategic plan	2	110	0.04	12	109	8.94	110
social network	2	107	0.04	14	56	4.59	107
work environment	2	106	0.04	15	94	7.71	106
organizational effectiveness	2	103	0.04	16	100	8.20	103
firm performance	2	90	0.04	17	55	4.51	90
research organizational	2	90	0.04	17	80	6.56	90
employee attitude	2	89	0.04	19	85	6.97	89
human capital	2	89	0.04	19	38	3.12	89

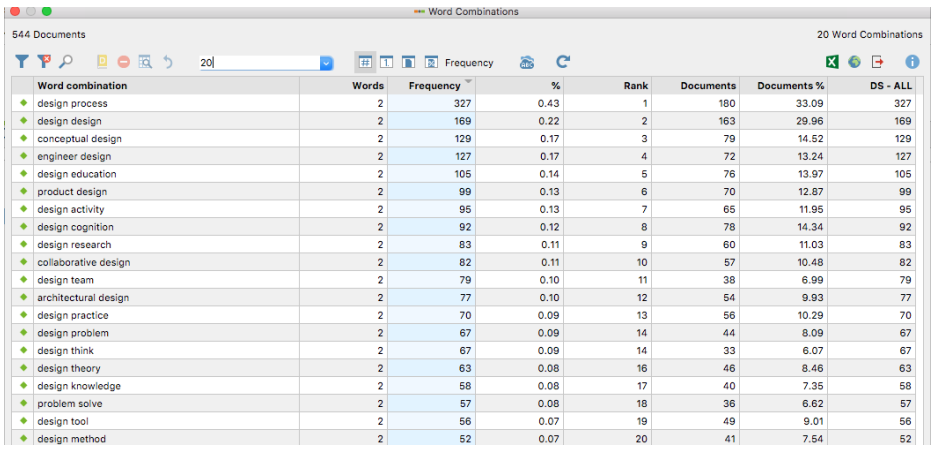
In AMJ (n=1,219), the number one-word combination was *organizational behavior* (23%). The second was *business enterprise* (14%). The word *organizational* was present in five other combinations such as *organizational structure* (5), *organizational change* (7), *organizational sociology* (12), *organizational effectiveness* (16) and finally, *research organizational* (18). *Design*, *Design Thinking*, *creativity or innovation* did not appear in the AMJ top twenty lists.

5.5.3 *DS Word Combination Results*

Figure 24 displays the top 20-word combinations for DS. The columns show the number of words in the combination, the frequency with which they occur, percentage, rank and the number of documents.

Figure 24

DS top 20 most commonly used word combinations



Word Combinations

544 Documents — 20 Word Combinations

20 — Frequency

Word combination	Words	Frequency	%	Rank	Documents	Documents %	DS - ALL
design process	2	327	0.43	1	180	33.09	327
design design	2	169	0.22	2	163	29.96	169
conceptual design	2	129	0.17	3	79	14.52	129
engineer design	2	127	0.17	4	72	13.24	127
design education	2	105	0.14	5	76	13.97	105
product design	2	99	0.13	6	70	12.87	99
design activity	2	95	0.13	7	65	11.95	95
design cognition	2	92	0.12	8	78	14.34	92
design research	2	83	0.11	9	60	11.03	83
collaborative design	2	82	0.11	10	57	10.48	82
design team	2	79	0.10	11	38	6.99	79
architectural design	2	77	0.10	12	54	9.93	77
design practice	2	70	0.09	13	56	10.29	70
design problem	2	67	0.09	14	44	8.09	67
design think	2	67	0.09	14	33	6.07	67
design theory	2	63	0.08	16	46	8.46	63
design knowledge	2	58	0.08	17	40	7.35	58
problem solve	2	57	0.08	18	36	6.62	57
design tool	2	56	0.07	19	49	9.01	56
design method	2	52	0.07	20	41	7.54	52

In this second journal, DS (n=544), the word *Design* appeared in nineteen of the twenty most common word combinations. The only combination from the top twenty list that did not include the word *Design* was number 18 *problem solve* (7%). At the top of the list was *Design process* which appeared in 33% of the sample.

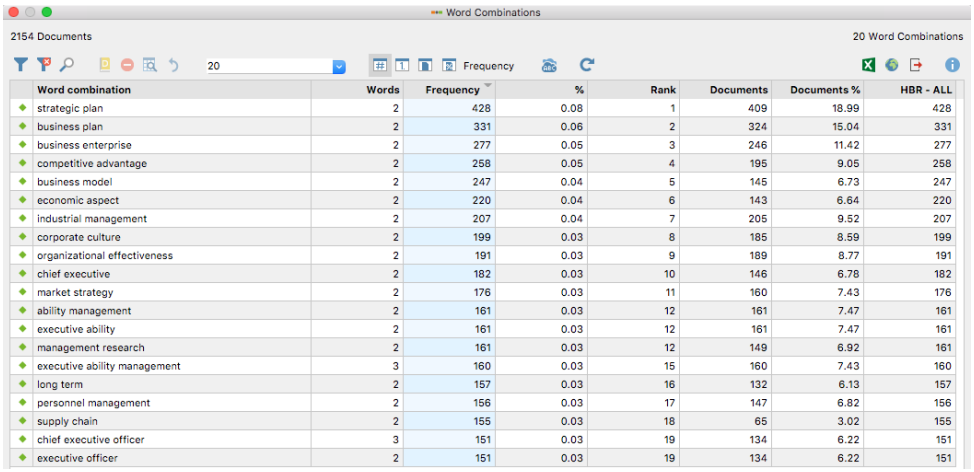
Although it does not have a specific meaning, the term *Design Design* was the second most frequent word combination (30%). Similarly, *Design thinking* in its entirety did not appear, although the combination of *Design think* (6%) did make this list. The words *business*, *creativity* or *innovation* did not appear in the top twenty for DS.

5.5.4 *HBR Word Combination Results*

Figure 25 shows the top 20 most commonly found word combinations for HBR. The columns show the number of words in the combination, the frequency with which they occur, percentage, rank and the number of documents.

Figure 25

HBR top 20 most commonly used word combinations



Word combination	Words	Frequency	%	Rank	Documents	Documents %	HBR - ALL
strategic plan	2	428	0.08	1	409	18.99	428
business plan	2	331	0.06	2	324	15.04	331
business enterprise	2	277	0.05	3	246	11.42	277
competitive advantage	2	258	0.05	4	195	9.05	258
business model	2	247	0.04	5	145	6.73	247
economic aspect	2	220	0.04	6	143	6.64	220
industrial management	2	207	0.04	7	205	9.52	207
corporate culture	2	199	0.03	8	185	8.59	199
organizational effectiveness	2	191	0.03	9	189	8.77	191
chief executive	2	182	0.03	10	146	6.78	182
market strategy	2	176	0.03	11	160	7.43	176
ability management	2	161	0.03	12	161	7.47	161
executive ability	2	161	0.03	12	161	7.47	161
management research	2	161	0.03	12	149	6.92	161
executive ability management	3	160	0.03	15	160	7.43	160
long term	2	157	0.03	16	132	6.13	157
personnel management	2	156	0.03	17	147	6.82	156
supply chain	2	155	0.03	18	65	3.02	155
chief executive officer	3	151	0.03	19	134	6.22	151
executive officer	2	151	0.03	19	134	6.22	151

In HBR (n=2,154), the most frequent word combination was *strategic plan* (19%). The word *business appeared in business plan* (15%) at number two, *business enterprise (11%)* at number three and *business model (7%) at number five.* None of the word combination frequencies for this list in HBR included *Design, creativity* or *innovation.*

5.5.5 *Word Combination Comparison*

A comparison of the top 20-word combinations lists for the three journals showed that AMJ and HBR had six-word combinations in common. However, the words appeared with different rankings in the list.

Figure 26 displays a side by side view of each of the top twenty-word combinations for each journal—the word combinations in joint appear as bold and italic text on top of colour paired highlight boxes.

Figure 26

Comparison top twenty word combinations AMJ, DS and HBR

	AMJ (n=1,219)		DS (n=544)		HBR (n= 2,154)
1.	Organizational behavior	1.	***Design*** process	1.	Strategic plan
2.	Business enterprise	2.	***Design*** design	2.	Business plan
3.	Management research	3.	Conceptual ***Design***	3.	Business enterprise
4.	Job performance	4.	Engineer ***Design***	4.	Competitive advantage
5.	Organizational structure	5.	***Design*** education	5.	Business model
6.	Social aspect	6.	Product ***Design***	6.	Economic aspect
7.	Organizational change	7.	***Design*** activity	7.	Industrial management
8.	Industrial management	8.	***Design*** cognition	8.	Corporate culture
9.	Personnel management	9.	***Design*** research	9.	Organizational effectiveness
10.	Management science	10.	Collaborative ***Design***	10.	Chief executive
11.	Job satisfaction	11.	***Design*** team	11.	Market strategy
12.	Organizational sociology	12.	Architectural ***Design***	12.	Ability management
13.	Strategic plan	13.	***Design*** practice	13.	Executive ability
14.	Social network	14.	***Design*** problem	14.	Management research
15.	Work environment	15.	***Design*** think	15.	Executive ability management
16.	Organizational effectiveness	16.	***Design*** theory	16.	Long term
17.	Firm performance	17.	***Design*** knowledge	17.	Personnel management
18.	Research organizational	18.	Problem solve	18.	Supply chain
19.	Employee attitude	19.	***Design*** tool	19.	Chief executive officer
20.	Human capital	20.	***Design*** method	20.	Executive officer

Figure 26 shows shared word combinations (see colour matches) for AMJ, DS and HBR.

The six crossover word combinations between AMJ and HBR were:

1. *Business enterprise*
2. *Management research*
3. *Industrial management*
4. *Personnel management*
5. *Strategic plan*
6. *Organizational effectiveness*.

In AMJ, the word combination *Business enterprise* was second and in HBR it was third. Number one in HBR, *Strategic plan* was lower down the list in AMJ where it appeared at number 13. The term *Organizational effectiveness* was at number 16 in AMJ and number nine in HBR.

The journal DS had no word combinations in common with the other two journals, AMJ or HBR.

Figure 27 highlights the word combinations in common for each journal and their hierarchical order of difference in brackets and the lack of any word combinations in common with DS.

Figure 27

Shared Word Combinations in Hierarchy for AMJ, DS and HBR

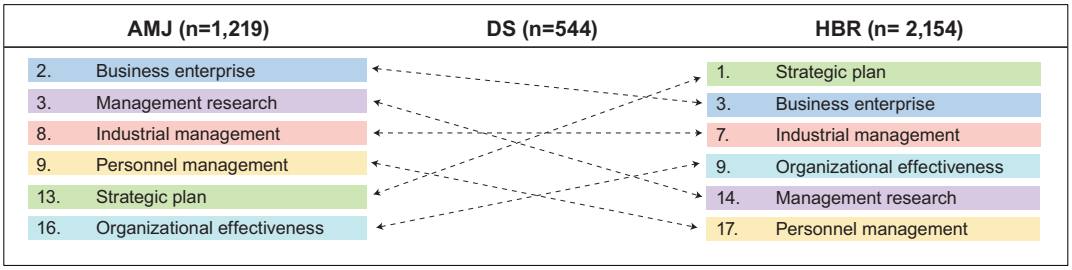


Figure 27 shows word combinations in common for AMJ, DS and HBR for January 2000 to December 2017.

The word combination search provided comprehensive insights into the journals' topics. DS stood in stark contrast to the other two journals in this list of all the journals' top 20-word combinations. None of the word combinations from DS had any crossover with the other two journals. In this list, DS does not refer to business or organisations. AMJ and HBR had six-word combinations in common and they all related, in some way, to business. However, neither AMJ nor HBR had any word combinations in common with *Design*.

Moreover, none of the three journals acknowledged creativity or innovation in their top 20-word combinations.

5.5.6 *Timeline Periods*

To assist in the observation of any trends, Chai and Xiao (2012) divided their data into three timelines, "namely Period I, Period II and Period III" (p.26).

Following Chai and Xiao (2012), Study Two had three six-year periods: Period I (January 2000 – December 2005), Period II (January 2006 to December 2011) and Period III (January 2012 to December 2017).

Table 25 summarises each Period and its relationship with the number of issues and sample (units of analysis) for each journal.

Table 25

Time period, volumes and articles for AMJ, DS and HBR

2000-2017	**AMJ, DS and HBR volumes / articles sample**		
	AMJ (n=1,219)	DS (n=544)	HBR (n=2,154)
Period I	36 (396)	36 (172)	63 (779)
Period II	36 (370)	36 (180)	64 (818)
Period III	37 (453)	38 (192)	56 (557)
Total	109 (1,219)	110 (544)	183 (2,154)

The sample for AMJ was n=1,219. In Period I, AMJ published 36 issues which contained a total of 396 articles. In Period II, 36 volumes contained 370 published articles. In Period III, 37 issues resulted in a sample of 453 articles.

The DS sample was n=544. In Period I, DS also published 36 volumes, but the number of articles was less than half of AMJ at 172. Likewise, in Period II, DS published 36 volumes that contained 180 articles. In Period III, there were 38 issues with 192 articles.

The largest sample was HBR with n=2,154. In Period I, HBR published 63 issues containing a total of 779 articles. Similarly, in Period II, 64 issues and 818 articles. In Period III, 56 volumes containing 557 articles.

5.5.7 Design in Titles and Abstracts

The number of times *Design* appeared in the articles was a significant measure for the content analysis. The following information presents the findings for frequency analysis of the article titles and abstracts for each period. Table 26 presents a summary of the results for *Design* in the titles, followed by Table 27 with a summary of *Design* in the abstracts.

Table 26

Design in Titles. AMJ, DS and HBR Periods I, II, III

2000-2017	Design in Titles		
Articles (sample)	AMJ	DS	HBR
Period I (2000 -2005)	3 (396)	134 (172)	3 (779)
Period II (2006-2011)	3 (370)	135 (180)	10 (818)
Period III (2012-2017)	1 (453)	161 (192)	7 (557)
Total	7 (1,219) (0.6%)	430 (544) (79%)	20 (2,154) (1%)

In Period I and Period II, the journal AMJ had three articles with *Design* in the title. In Period III, only one article used the term *Design*. In total, there were seven instances of *Design* in titles for AMJ over the 18 years of Study Two (0.6%).

In DS, the word *Design* appeared in 134 titles for Period I (78%), 135 titles (75%) in Period II and 161 titles (84%) in Period III. Subsequently, over the three periods, *Design* was in the titles of 79% of the sample.

The journal HBR, which had the most significant sample, returned only slightly more than AMJ.

In HBR, there were a total of twenty article titles (1%) that included *Design* for the eighteen-year study.

In Period I, HBR had three articles with *Design* in their titles (0.4%), ten articles in Period II (1.2%) and seven articles in Period III (1.2%). Thus, the journal HBR, which had the largest sample, returned only slightly more than AMJ.

The analysis also looked at the occurrence of *Design* in article abstracts; thus, Table 25 presents a summary of *Design* in the abstracts.

Table 27

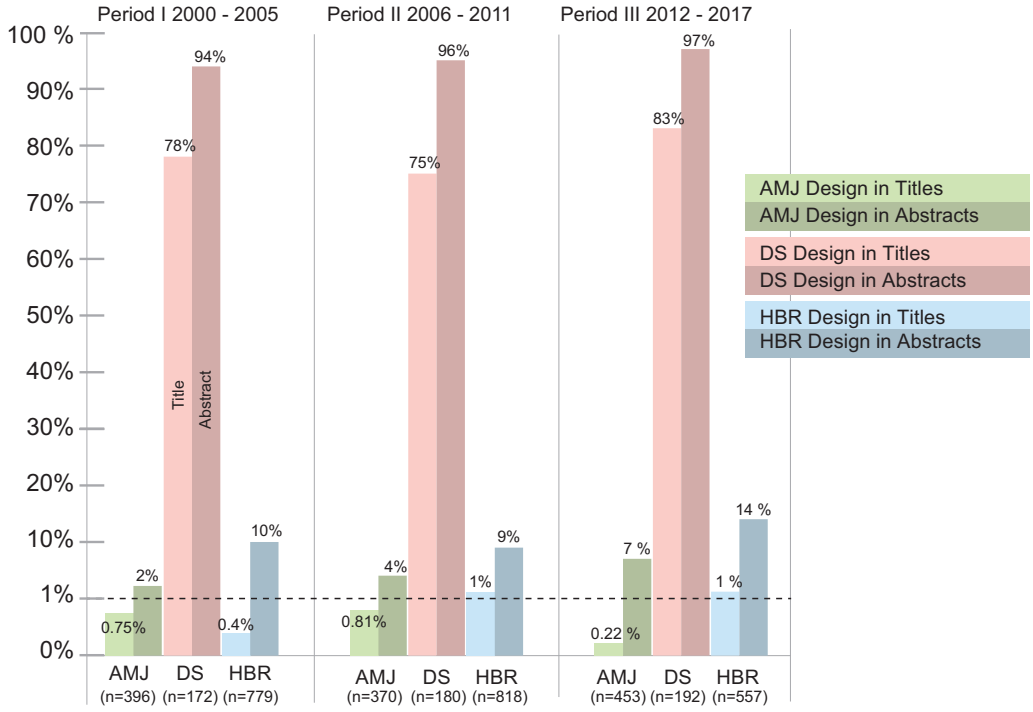
Design in Abstracts. AMJ, DS and HBR Periods I, II, III

2000-2017	***Design* in Abstracts**		
Articles/ sample	AMJ	DS	HBR
Period I (2000 -2005)	9 (396)	162 (172)	79 (779)
Period II (2006-2011)	15 (370)	172 (180)	77 (818)
Period III (2012-2017)	32 (453)	187 (192)	80 (557)
Total	56 (1,219) (5%)	521(544) (96%)	236 (2,154) (11%)

The results were similar in the article abstracts. As with the article titles, DS had by far the most occurrences of *Design* in the abstracts. Figure 28 shows a graphic comparison of the frequency of *Design* in both the title and abstracts for each journal.

Figure 28

Design in Titles and Abstracts of AMJ, DS and HBR



The colours in Figure 28 represent the article titles and abstracts for each journal. The lighter colours represent titles and darker shades are the abstracts. The rounded percentages represent the closest number.

In comparison to the titles, there were more occurrences of *Design* in all three journal abstracts. However, DS showed a significant difference to the other two journals in the number of *Design* occurrences.

In Period I, the results for AMJ show that nine article abstracts (2.3%) included the term *Design* compared to three titles (0.75%). In Period II, the number of abstracts with *Design* in AMJ rose to 15 (4.05%), effectively three titles. In Period III, the number more than doubled to 32 article abstracts, which equated to 7% of the sample. Overall, AMJ had 56 abstracts that included *Design*, which made up 5% of the AMJ (n=1219) sample.

However, in contrast, the results for DS showed Period I with 162 instances of *Design* in the abstract articles, which was 94% of the DS sample for that period and 16% more than the titles.

In Period II, 172 abstracts included *Design* or 95% of the DS sample (n=544). Similarly, in Period III, there were 187 or 97% with *Design* in the article abstracts.

Overall, only one article in the DS n=544 sample did not include the word *Design* in the title, abstract or keywords.

In other words, the remaining 543 articles included the word *Design* in one or more of those three areas. Thus, 99.8% of the DS sample used the word *Design* somewhere.

The HBR sample was n=2,154. In Period I, the results show that *Design* was present in 79 article abstracts for HBR, which equated to 10% of the sample and contrasting to three titles in HBR with *Design* (0.4%). For Period II, HBR had 77 instances of *Design* in abstracts or 9.4% of the sample for that timeframe.

Similarly, in Period III, there were 80 abstracts with *Design*. However, the sample size for that period was smaller than previously (n=557), so the sample percentage was slightly higher at 14.4%. Generally, the use of *Design* in HBR titles was similar to AMJ at 1%. However, in HBR, there were more appearances in the article abstracts.

The content analysis then examined how often *Design Thinking* appeared in the titles and abstracts of the journal samples.

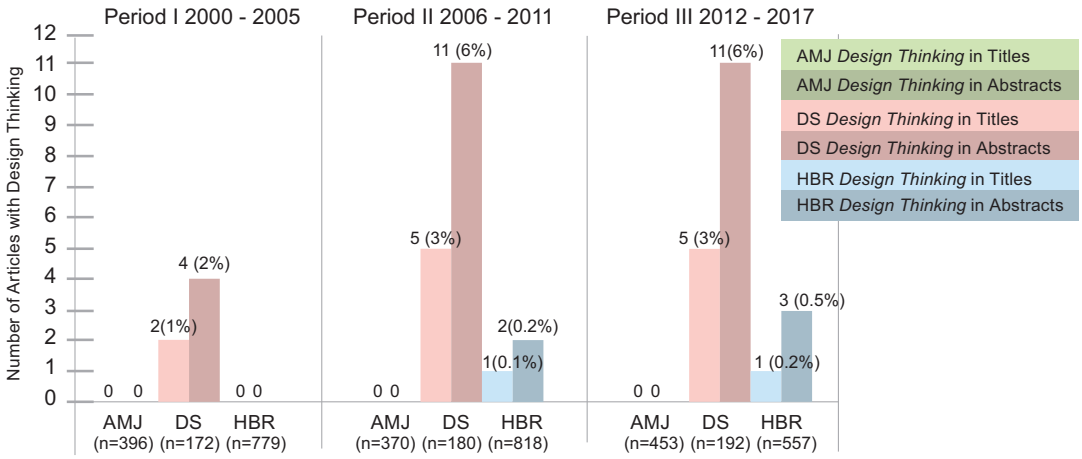
5.5.8 *Design Thinking in Titles and Abstracts*

The term *Design Thinking* had limited appearances in any of the journals for the whole timeframe.

In AMJ, the term *Design Thinking* did not appear anywhere in AMJ titles or abstracts for Period I, Period II or Period III. In DS, Period I *Design Thinking* was present in two DS titles (1.2%), which jumped to five article titles in Period II and Period III. However, these numbers equate to only 2.8% and 2.6% of the sample, respectively. Figure 29 summarises the number of times *Design Thinking* appears in the article titles and abstracts for each journal period.

Figure 29

Articles with Design Thinking in Titles and Abstracts



The colours in Figure 29 represent the article titles and abstracts for each journal. The lighter colours represent titles and the darker shades, the abstracts. The colours of AMJ are not present as there was no data to show. The rounded percentages represent the closest number.

In DS Period I article abstracts, *Design Thinking* appeared in four articles (2.3%) and 11 (6 %) in Period II and the same in Period III (6 %).

Likewise, there was only a slight change in numbers across the timeline for HBR. Similar to AMJ, in Period I, *Design Thinking* was absent from any article titles or abstracts. However, in Period II, *Design Thinking* was present in one title (0.1%) and two abstracts (0.2%). In Period III, although the numbers were similar, the sample was smaller, so one title with *Design Thinking* was 0.2% of the sample and 0.5% for *Design Thinking* in three article abstracts.

Overall, the frequency of *Design Thinking* in any of the journals was low. In the titles, AMJ was 0%, but unexpectedly DS 2% and HBR 0.1%. DS had a slight increase to 5% for *Design Thinking* in the abstracts, but AMJ remained at 0 and HBR was 0.1%. The following results (5.5.9) examine the frequency of the words *Design* and business together.

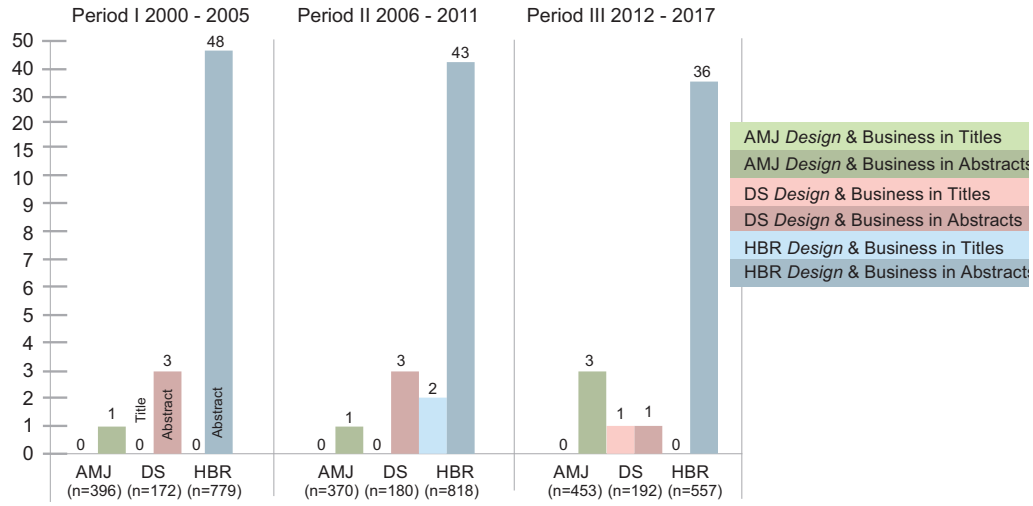
5.5.9 *Design and Business in Titles and Abstracts*

The purpose of Study Two was to examine the communication of *Design* and business in professional publications. Thus, the analysis included a search for how often, *Design* and business were linked together by the authors.

Figure 30 shows the number of articles across the three periods that include the words *Design* and business. The search focused on the titles and then the abstracts of the journal samples.

Figure 30

Design and Business in Titles and Abstracts: AMJ, DS & HBR.



The colours in Figure 30 represent article titles and abstracts for each journal. The lighter colours represent titles and the darker shades, abstracts. There was no data for AMJ titles. The rounded percentages represent the closest number.

The results show, across all three periods, there were limited occurrences of *Design* and business together in either the titles or abstracts of AMJ and DS. Moreover, throughout Period I, the words *Design* and business did not appear together in any article titles for AMJ, DS or HBR. However, in all three periods, there were significantly more occurrences of *Design* and business in HBR abstracts compared to the other two journals.

AMJ did not publish any articles that included *Design* and business in the titles for the entire timeframe, Period I, Period II and Period III. In Period I, AMJ had a single abstract that included the two words *Design* and business (0.3%). Similarly, in Period II, there was also one occurrence. In Period III, this jumped to three article abstracts, which was still only 0.7% of the sample.

DS had comparable numbers to AMJ. In Period I, *Design* and business did not appear in any titles, although it was present in three (1.7%) article abstracts.

Similarly, Period II had no titles, but three article abstracts with *Design* and business.

In Period III, for the first time in DS, the words appeared together in one (0.5%) article titled, *Service design as finished business* (Snelders & Vervloed, 2015).

However, *Design* and business did not appear in this article's abstract or keywords. Moreover, the occurrences in DS abstracts dropped to one article in Period III from three articles in Period I and Period II.

Likewise, in Period I and Period III, HBR did not include the words *Design* and business in any article titles.

However, Period II included two article titles with the word combination of *Design* and business. These were: *How to Design Smart Business Experiments (*Davenport, 2009) and *How to Design A Winning Business Model* (Casadesus-Masanell & Ricart, 2011). The first title did not include the exact words in its abstract and the second title did include the words in the abstract.

The consistently high number of *Design* and business occurrences in HBR abstracts across all three periods were significantly more than AMJ and DS. For HBR in Period I, 48 article abstracts (6%) included *Design* and business. In Period II, the number was 43 (5.3%) and in Period III, 36 (6.5%).

Overall, these results are relatively small numbers in relation to the sample sizes. HBR used the terms *Design* and business more frequently in the abstracts than AMJ and DS. The following sections (5.5.10–5.5.18) provide results from examining keywords and their use of *Design* across all three journals.

5.5.10 *Keyword Analysis*

Keywords represent words that authors have specifically assigned to summarise the most critical aspects of their writing (Pesta, Fuerst, & Kirkegaard, 2018). Grouping and categorising these keywords shed light on how the authors viewed *Design* and business as well as the topics that the journal editors selected for publication.

Table 28 presents a summary of the number of keywords found in the sample for each journal.

Table 28

Total Keywords for each publication (2000-2017)

2000 – 2017	Total Number of Keywords per Publication		
	AMJ	DS	HBR
Total Keywords	10,853	2,456	18,127
Sample Size	1,219	544	2,154

The total number of keywords for the AMJ sample was 10,853 from a sample size of 1219. Overall, the keywords ranged from 18, for the most in one article and least with three keywords. The AMJ sample (n=1,219) had one article without any keywords.

DS had the smallest sample of 544 and the least number of keywords at 2,456. Most articles had five keywords (n=341). The remaining articles included between two keywords, the lowest number and six, the highest. Three articles in the DS sample did not have any keywords.

HBR had the largest sample size of 2,145 articles with 18,127 keywords, the greatest number of keywords for the journals. The maximum number of keywords per article was 16, two less than AMJ. The lowest was two keywords for only two articles, but there were 33 articles without keywords. The average number of keywords for the HBR sample was eight per article.

5.5.11 *Top 22 Keywords for AMJ, DS and HBR*

The disproportionate and large number of keywords for each journal, AMJ 10,853, DS 2,456 and HBR 18,127, meant that, after a point, it was not feasible to compare them. The starting point was the top keyword in AMJ for the study timeframe (2000-2017). Thus, *organizational behavior* and its percentage (2.3%) to 0.5% were listed and the result was 22 top keywords for AMJ. The percentage of 0.5% was arbitrarily selected to represent a range of keywords. The keywords listed for AMJ became the benchmark and consequently, the top 22 keywords for DS and HBR were also selected. Their percentage range was DS 3% to 1% and HBR 2% to 0.4%.

See Table 29 for the complete list of 22 keywords for AMJ, DS and HBR.

Table 29

Top 22 Keywords for AMJ, DS and HBR (2000-2017)

	AMJ (10,853 KW)	DS (2,456 KW)	HBR (18,127 KW)
1	247 X Organizational behavior (2.3%)	77 X *Design* cognition (3%)	369 X Strategic planning (2%)
2	158 X Research (1.5%)	71 X Conceptual *Design* (3%)	299 X Business planning (2%)
3	128 X Organizational structure (1.2%)	71 X *Design* education (3%)	211 X United States (1%)
4	110 X Management (1%)	71 X *Design* process 71 (3%)	201 X Leadership (1%)
5	99 X Teams in the workplace (0.9%)	57 X Engineering *Design* (2%)	183 X Organizational effectiveness (1%)
6	94 X Strategic planning (0.9%)	56 X Product *Design* (2%)	158 X Corporate culture (1%)
7	93 X Organizational effectiveness (0.9%)	54 X Collaborative *Design* (2%)	154 X Industrial management (1%)
8	90 X Personnel management (0.8%)	53 X Creativity (2%)	150 X Competitive advantage (1%)
9	89 X Job performance (0.8%)	47 X Architectural *Design* (2%)	148 X Executive ability (Management) (1%)
10	87 X Industrial management (0.8%)	42 X *Design* theory (2%)	147 X Marketing strategy (1%)
11	87 X Organizational change (0.8%)	41 X *Design* activity (2%)	129 X Decision making (1%)
12	86 X Decision making (0.8%)	39 X *Design* tool (2%)	125 X Success in business (1%)
13	83 X Organizational sociology (0.8%)	37 X *Design* research (2%)	113 X Personnel management (1%)
14	81 X Management research (0.7%)	36 X *Design* practice (2%)	102 X Corporations - Growth (1%)
15	74 X Management science (0.7%)	35 X Case study (1%)	94 X Chief executive officers (0.5%)
16	64 X Employees – Attitudes (0.6%)	34 X Communication (1%)	91 X Organizational structure (0.5%)
17	61 X United States (0.6%)	34 X *Design* knowledge (1%)	89 X Management research (0.5%)
18	61 X Interpersonal relations (0.6%)	34 X Protocol analysis (6%)	87 X Organizational change (0.5%)
19	61 X Work environment (5%)	33 X Research methods (1%)	86 X Innovation management (0.5%)
20	59 X Chief executive officers (0.5%)	32 X Philosophy of *Design* (1%)	85 X Management styles (0.5%)
21	59 X Leadership (0.5%)	32 X Evaluation (1%)	80 X Executives (0.4%)
22	57 X Business planning (0.5%)	31 X Computer aided *Design* (1%)	80 X Management (0.4%)

In Table 29, each keyword shows the number of times the keyword appears plus its percentage of the total keywords. The number one keyword for AMJ was *Organizational behavior,* which was present in 247 articles but equating to only 2.3% of the total AMJ keywords (10,853). The 22nd keyword was *Business planning* that was present 57 times (0.5%).

For DS, the number one keyword was *Design cognition* with 77 occurrences (3%) of the sample (2,456) and the 22nd keyword was *Computer aided Design* with 31 incidents (1%).

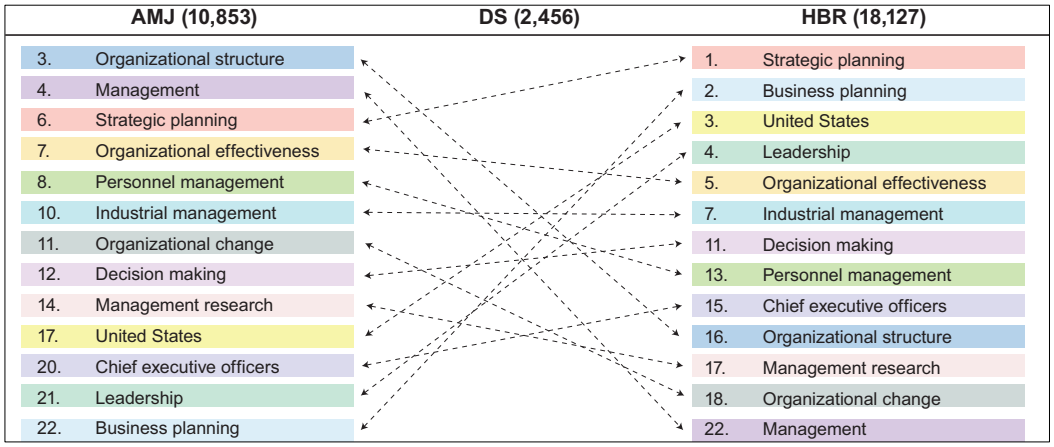
The top keyword for HBR was *Strategic planning* with 369 occurrences, which was 2% of that sample of keywords (18,127). The 22nd keyword for HBR was *Management* with 80 occurrences translating to 0.4% of the total keywords. The list of 22 keywords was analysed to find keywords in common between the journals.

5.5.12 *Keywords in Common*

There were 13 keywords in common between AMJ and HBR for the study timeframe 2000-2017 displayed in hierarchical order in Figure 31. Neither AMJ nor HBR shared any keywords with DS.

Figure 31

Keywords In-Common for AMJ, DS, HBR



AMJ, DS and HBR shared keywords coloured in pairs. No keywords in common with DS.

As discussed in the following sections AMJ, DS and HBR did have some shared keywords, but none appeared in the keywords in-common list in Figure 31.

Furthermore, of the 13 keywords shared in Figure 31, none were hierarchically identical. For example, *Organizational structure* was number three for AMJ but number 16 for HBR. Likewise, *Business planning* was number two for HBR and number 22 for AMJ.

As previously noted, there were no keywords in common between AMJ and DS or HBR and DS. However, a significant focus of the keyword analysis was keywords that included the word *Design*. Therefore, the next section reports on the results for *Design* keywords in each of the journals.

5.5.13 *Design Keywords*

The first step in examining the keywords for *Design*-related words was to divide them into periods. Thus, the total number of keywords became AMJ, Period I: 4,198 keywords; Period II: 3,407 keywords and Period III: 3,248 keywords. DS divided into Period I: 769 keywords; Period II: 801 keywords and Period III 886 keywords. HBR divided into Period I: 8,458; Period II: 5,907 and Period III: 3,762. See a summary in Table 30.

Table 30

Total Keywords Divided into Period I, Period II and Period III.

2000-2017	**Total *Design* Keywords per Period**		
	AMJ	DS	HBR
Period I (2000 -2005)	4,198	769	8,458
Period II (2006-2011)	3,407	801	5,907
Period III (2012-2017)	3,248	886	3,762
Total	10,853	2,456	18,127

In DS, there were 1,419 *Design* keywords identified in its 2,154 total keywords compared to 16 in AMJ and 59 in HBR.

Table 31 displays the number of *Design* related keywords for each journal.

Table 31

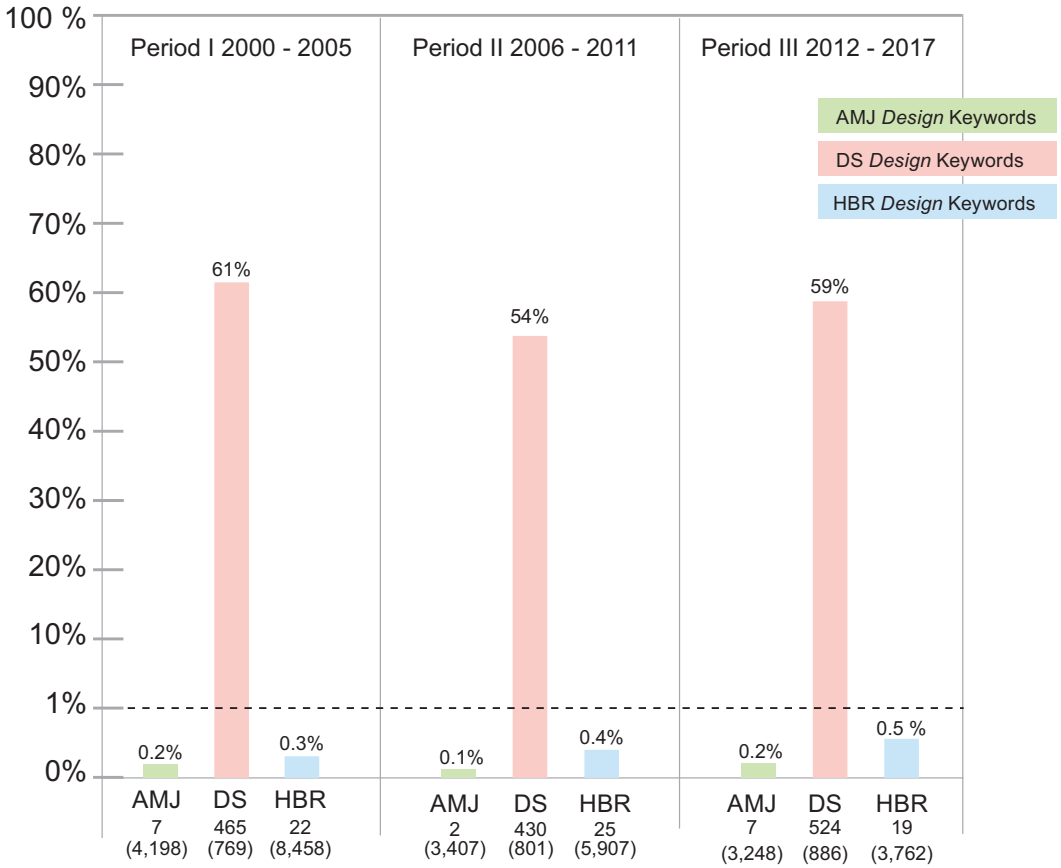
Design Keyword Totals for AMJ, DS and HBR

2000-2017	Total *Design* Keywords per Journal	
AMJ (10,853)	DS (2,456)	HBR (18,127)
16	1,419	66

Figure 32, below, summarises the total number of keywords for each period and the percentage of *Design* keywords per journal. There is a significant difference between the *Design* keywords in each period in comparison to AMJ and HBR.

Figure 32

Percentage of Design Keywords by Journal and Period



The three colours in Figure 32 represent AMJ, DS and HBR. At the bottom of the diagram, the smaller numbers are the *Design* keywords for that period and the numbers in brackets are the total keywords. The rounded percentages represent the closest number.

AMJ had a total of 10,853 keywords and only 16 were *Design* keywords. In Period I, there was seven *Design* keywords, 0.2% of the total keywords. In Period II, AMJ had two *Design* keywords (0.1%) and Period III, seven *Design* keywords (0.2%).

DS had a total number of 1,419 keywords. Of those, Period I had 465 *Design* keywords (61%); Period II had 430 (54%) and in Period III, 524 *Design* keywords (59%).

HBR had 59 *Design* keywords from its total of 18 ,127 keywords. Period I was 22 *Design* keywords, Period II, 25 and Period III, 19 *Design* keywords.

The following section examines the *Design* keyword categories.

5.5.14 *Design Keyword Categories*

Design keyword categories came from condensing any duplicates of the *Design* keywords. For example, Table 32 shows how for AMJ, the keyword *Experimental Design* appears once in Period I and three times in Period III. It became a single category of four occurrences of *Experimental Design* for 2000-2017. Consequently, in AMJ, the sixteen occurrences of *Design* keywords became eight *Design* keyword categories.

Table 32

AMJ Design Keywords for Period I, Period II and Period III

AMJ	**Frequency of *Design* Keywords**	
Period I (2000 -2005)	Period II (2006-2011)	Period III (2012-2017)
4,198 KW	3,407 KW	3,248 KW
5 X Product *Design*	1 X Replication (Experimental *Design*)	3 X Experimental *Design*
1 X Experimental *Design*	1 X Space vehicles – *Design* & construction	1 X Cell phone *Design* & construction
1 X Work *Design*		1 X Fashion designers – Psychology
		1 X Repeated measures *Design*
		1 X Work *Design*
7 (0.2%)	2 (0.1%)	7 (0.2%)

DS had 1,419 *Design* keyword occurrences from its total 2,456 keywords. In Period I, 465 keywords contributed to 80 *Design* categories. In Period II, 430 *Design* keywords created 99 categories and in Period III, 524 *Design* keywords became 128 categories. Once these categories were united, DS had 178 *Design* keyword categories.

HBR had 66 *Design* keyword occurrences from its total of 18,127 keywords. The total *Design* keywords (66) keywords became 36 *Design* keyword categories. See a complete list of *Design* keywords under Appendix D.

Table 33

Design Keywords Frequency Keywords AMJ, DS and HBR

2000-2017			
Journal	Keywords	*Design* KW Occurrences	*Design* KW Categories
AMJ	10,853	16	8
DS	2,456	1,419	178
HBR	18,127	66	36

A complete list of *Design* keywords for AMJ, DS and HBR, as well as the frequency in which they appeared, are presented under Appendix E.

5.5.15 *Design Keyword Comparison AMJ, DS and HBR*

An analysis of all *Design* keywords for AMJ, DS and HBR found *Product Design* was the only *Design* keyword category in common for AMJ, DS and HBR.

Moreover, *Product Design* was the only keyword match between AMJ and DS. However, AMJ did have a total of three matches with HBR, which were:

1. *Experimental Design*
2. *Product Design*
3. *Work Design*

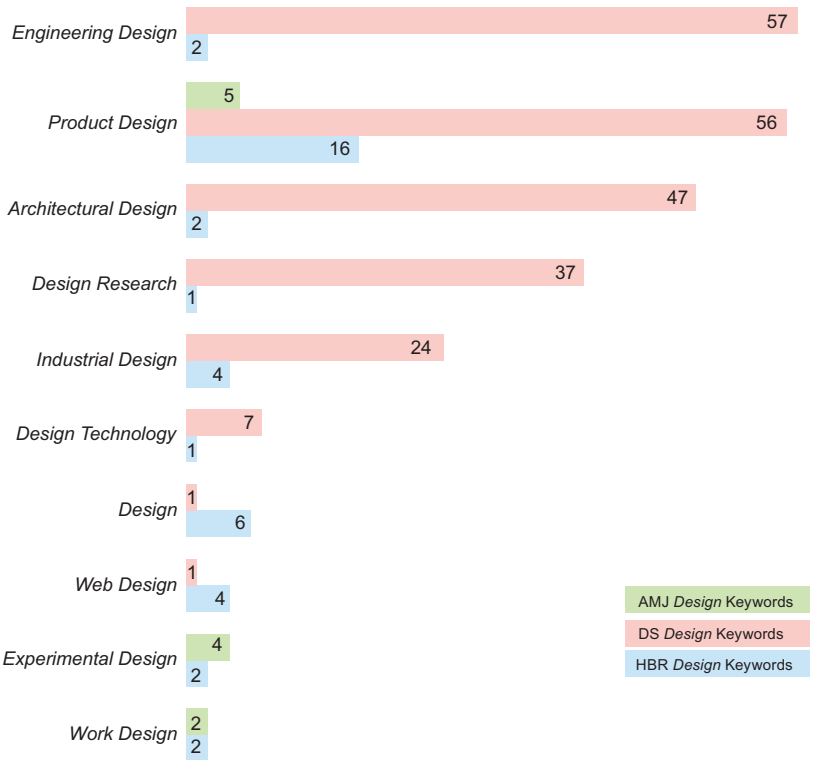
Product Design was the leading *Design* keyword for AMJ and HBR. Second, in AMJ was *Experimental Design* and third *Web Design*. Second, for HBR was *Design* and third *Web Design*.

The top keyword for DS was *Design Cognition*, followed closely by *Design Process*, *Conceptual Design* and *Design Education* (equal second). The keyword, *Product Design*, was fourth on the list of *Design* keywords for DS.

Figure 33 is a graphical representation of the *Design* keywords in common for AMJ, DS and HBR. In the image, AMJ is a light green colour, DS pale pink and HBR light blue.

Figure 33

Design Keywords In-Common for AMJ, DS and HBR 2000-2017



Numbers represent the number of times the *Design* keyword appeared in the journal over the timeframe 2000 – 2017.

HBR had the three keywords in common with AMJ plus eight *Design* keywords in common with DS. Nevertheless, the wording was not always the same but considered sufficiently similar to reflect cross-over keywords—for example, *Web Design* (HBR) or *web-based Design* (DS).

The DS *Design* keyword, *Engineering Design*, was the first *Design* keyword in common with AMJ and DS. Although, over the time frame, it had only two occurrences in HBR. Similarly, *Product Design* had a limited appearance in AMJ and HBR while also being the most used Design keyword in AMJ and HBR.

The *Design* keywords, *Experimental Design* and *Work Design*, were in common for AMJ and HBR. However, their percentage of the general keywords was hardly recordable at 0.002% and 0.001%, respectively. Furthermore, they did not appear in DS.

The following section examines the occurrences of *Design Thinking* in the keywords.

5.5.16 *Design Thinking Keyword in-Common*

The keyword *Design Thinking* did not occur in any period for AMJ. In DS, *Design Thinking* was used eight times explicitly and once as *Parametric Design Thinking.*

In HBR, the *Design Thinking* keyword appeared once in 2016. Unexpectedly, the HBR article, *Design Thinking* (Brown, 2008), included five keywords, but they did not include *Design Thinking*. See Table 34 for a summary of *Design Thinking* keywords for 2000 - 2017.

Table 34

Design Thinking Keyword in AMJ, DS and HBR

2000-2017	AMJ (10,853)	DS (2,456)	HBR (18,127)
Design Thinking		8	1
Parametric *Design Thinking*		1	
Human-centred Design		1	

The term *Human-centred Design* surfaced during analysis associated with *Design Thinking.*

There was no evidence of *Human-centred Design* or *Human-centered Design* in AMJ or HBR. Generally, however, in DS, *Human-centred Design* was present in two titles and the abstracts of those two articles. However, only one of the articles included *Human-centred Design* as a keyword: *Advancing the strategic impact of Human-centred design* (van der Bijl-Brouwer & Dorst, 2017).

5.5.17 *Creativity Keywords in-Common*

Each of the three journals had variants of keywords associated with creativity. DS was the only journal to use the single term 'creativity' as a keyword.

Table 35 lists the keyword variations found in AMJ, DS and HBR for creativity for the study period of 2000 – 2017.

Table 35

Creativity in Keywords across AMJ, DS and HBR

Keyword	AMJ (10,853)	DS (2,456)	HBR (18,127)
Creativity		53	
Creative ability	19		4
Creative ability – Economic aspects	1		1
Creative ability in business	33		60
Creative ability in business – Psychological aspects			1
Creative ability in business – Research	3		1
Creative ability – Social aspects			1
Creative ability – Study and teaching.			1
Creative ability in technology	4		1
Creative *Design*		19	
Creative destruction			2
Creativity diagnostics		1	
Creative thinking	2		14
Creativity in advertising			2
Creative process		3	
Total	62	76	88

AMJ had 62 occurrences of a keyword related to creativity that resulted in six keyword categories for creativity between 2000 – 2017, just 1% of the AMJ keyword total.

DS had 76 instances and four keyword categories (3%), while HBR had 88 (1%) instances of creative keywords that became 11 keyword categories for creativity.

The combined keywords for creativity across the three journals showed 15 unique keywords for creativity.

DS was the only journal to include the term creativity on its own. All other keywords for creativity included had a descriptive word, for example, Creative thinking.

5.5.18 *Innovation in Keywords in-Common*

This section presents a search for 'innovation' in the keywords of AMJ, DS and HBR keywords. As noted with creativity in the previous section, each journal had variations of the innovation keywords. Table 36 shows the innovation keywords for all three journals for 2000 – 2017.

Table 36

Innovation Keywords in AMJ, DS and HBR

2000 – 2017	**Innovation Keywords**		
	AMJ (10,853)	DS (2,456)	HBR (18,127)
Art of Innovation: Lessons in Creativity from IDEO			1
Business enterprises – Technological innovations			3
Diffusion of innovations	8	1	5
Diffusion of innovations – Economic aspect			2
Diffusion of innovations – Research	1		1
Educational innovations			2
Innovation		29	
Innovation adoption	23		57
Innovation adoption – Research	1		
Innovation adoption – Economic aspects			1
Innovation and Its Discontents: How Our Broken Patent System Is Endangering Innovation & Progress & What to Do About It			1
Innovative design		1	
Innovations in business	20		49
Innovations in business – Economic aspects			1
Innovations in business – Research	3		
Innovation management	22		86
Innovation management – Research	2		2
Innovation management – Methodology			1
Innovation relay centers			1
Medical innovations	2	1	2

2000 – 2017	Innovation Keywords		
Open innovation			1
Technological innovations	39		53
Technological innovations – Developing countries			1
Technological innovations- Economic aspects	4		5
Technological innovations- Economic aspects- Italy	1		
Technological innovations – Employee participation	1		1
Technological innovations – Management	1		4
Technological innovation – Marketing			1
Technological innovations – Research	2		
Technological innovations – Social aspects	1		1
The Innovator's Dilemma			1
Service innovation		1	
Social innovation		1	1
Total	131	34	284

Overall, there were only two common keyword categories for innovation across AMJ, DS and HBR: *Diffusion of innovations* and *medical innovations*.

AMJ and HBR had ten keyword matches, although there was no consistency between the number of occurrences. For example, in HBR, the keyword *Innovation management* had 86 occurrences but only 22 in AMJ. DS had one additional match with HBR, *Service innovation*.

In AMJ, there were 131 occurrences of *innovation*, which was just over 1% of the AMJ keywords (10,853). These 131 innovation keywords became 16 keyword categories for AMJ.

DS included 34 occurrences of innovation in article keywords related to just 1% of the DS keyword total (2,456). The combined result for DS was six innovation keyword categories. Furthermore, DS had two unique innovation keywords: *innovation* and *Service innovation*.

HBR had the most significant number of innovation keywords at 284, although only 1% of the keywords (18,127). The occurrences of innovation keywords in HBR combined to create 26 innovation keyword categories.

Moreover, HBR had 12 unique innovation keywords that did not march with AMJ or DS.

Mainly, once combined, there were 33 unique keywords for innovation in the three journals. As with creativity, DS was the only journal to use just the word *Innovation* as a keyword. All other instances were associated with a descriptive word, such as *Innovations in business.*

The following Section 5.6 presents a summary of this chapter.

5.6 Summary

Study Two examined three journal publications, *Academy Management Journal* (AMJ), *Design Studies* (DS) and *Harvard Business Review* (HBR). The study aimed to understand how their editors communicated a view of *Design* and *business* through the articles they selected for publication.

The sample frame was a census of published items from each journal from January 2000 until December 2017, a total of 18 years (N=7,671). The unit of analysis was articles; thus, unnecessary elements were removed from the census to arrive at a final sample of n=3917 published articles, which was AMJ n=1,219, DS n=544 and HBR n=2,154.

The most frequent word combinations across the three journals showed that AMJ and HBR had six areas in common, these were:

1. *business enterprise*
2. *management research*
3. *industrial management*
4. *personnel management*
5. *strategic planning*
6. *organizational effectiveness.*

In this list, neither AMJ nor HBR had word combinations in common with DS. In DS, nearly all word combinations included the word *Design*, for instance, *Design process*. Furthermore, in *DS,* 79% of the article titles and 96% of their abstracts included the word *Design*.

The word *Design* occurred in 0.6% of the AMJ titles and 5% of the abstracts. In HBR, *Design* was 1% of the titles and 11% abstracts.

The results for keywords show a single keyword, *Product Design,* was the only design-related keyword familiar to AMJ, DS and HBR.

AMJ had no in-common *Design* keywords with DS but three with HBR. Overall, HBR had eight in-common *Design* keywords with DS.

In the keywords, *Design Thinking* had nine appearances in DS, yet only one in HBR and none in AMJ. However, *Design Cognition* was the top keyword for DS overall.

Neither AMJ nor HBR had any keyword categories in common with the top 22 general keywords for DS.

There were multiple keyword categories representing creativity and innovation for all three journals. Mainly, creativity had a more substantial presence in DS than AMJ and HBR. In contrast, innovation had a more substantial presence in AMJ and HBR and less in DS.

A review of the keywords generally (not word search specific) found 13 common categories for AMJ and HBR in the top 22 keyword categories identified.

Further analysis of Study Two results occurs in Chapter 7 *Synthesis and Discussion*, which compares and contrasts all three studies' results. The third and final study for this thesis is Chapter 6: Study Three *Recruiting Design.*

Chapter 6: **Study Three *Recruiting Design***

Chapter six presents the methods and results for the third and final study. The purpose of this third study was to examine how businesses communicate a meaning of *Design* through their writing up of job listings. In particular, how the wording for a job expressed the meaning of *Design* for professional communities and the economy.

The research question underpinning this study was:

How do businesses use the term *Design* in their online job ads?

A content analysis examined job listings on *seek.com.au*, a leading recruitment and career portal in Australia and New Zealand, in a longitudinal study conducted in January and February 2013 (Jervis & Brand, 2014) and repeated in January and February 2019.

Moreover, this study used a standardised codebook for both years to ensure the process was as replicable and reliable as possible (Neuendorf, 2017).

The job portal website *seek.com.au* is dynamic, meaning that the list of available job ads changes each time the page is refreshed or clicked. Due to the website's dynamic and evolving content, the sample was necessarily limited and cross-sectional (Jervis & Brand, 2014).

Section 6.1 describes the pilot study for the 2013 study, 6.2 describes the codesheet instrument, 6.3 discusses the sample frame, 6.4 the data collection, 6.5 the final sample and 6.6 presents the results of the analysis.

6.1 Pilot Study

A pilot of Study Three took place in January 2013. The pilot study tested the instrument (codebook) with 20 job listings from the *seek.com.au* website. The codebook measured how prospective employers used the word *Design* in their job listings. The unit of analysis was individual job listings downloaded from the *seek.com.au* website.

Information from the job listings formed the questions and variables, such as the job posting date, the explicitly stated job title, the job classification, the location and the salary of the job and type of work (for example, full or part-time). In all, the codebook included 18 variables made up of multiple observable items resulting in 104 measures.

After the pilot study in 2013, a refinement of the codebook questions ensured the job listing variables and their measures were exhaustive and mutually exclusive (Jervis & Brand, 2014).

6.2 Timeframe, Codebook & Software

Study Three is a new study that uses the process undertaken in a similar previous study by Jervis and Brand (2014). Their 2013 study was presented at a conference in Melbourne in 2013 and published in 2014 (Jervis & Brand, 2014).

A repeat of the 2013 process occurred during January and February 2019. The results for Study Three compare 2013 and 2019 data.

In 2013 the codesheet was constructed and hosted on *SurveyMonkey,* an online data-collection tool designed primarily for market and social research surveys. In 2019, Bond University provided access to similar software, *qualtrics.* The 2019 study used the *qualtrics* software with a copy of the 2013 codebook.

Jervis and Brand (2014) found that the benefits of using either *SurveyMonkey* or *qualtrics* were:

1. Settings allow data entry from different computers or as required for content analysis, multiple completions from the same computer.
2. The software automates previously time-consuming handling of paper surveys and
3. provides access to reporting tools.
4. It offers export options to other statistics application software if required.

See Appendix F for a copy of the codebook used for Study Three. Two online versions of the codebook are also available:

(2013 codebook) *SurveyMonkey*: https://bit.ly/3g1Vxbp
(2019 codebook) *qualtrics*: https://bit.ly/2A5nAYa

6.3 Sample Frame

In 2013, the *seek.com.au* database had over 100,000 and up to 200,000 job listings in Australia at any one time. There were over 120,000 searchable job ads (Jervis & Brand, 2014; *seek.com.au*, n.d.).

The number of jobs ads fluctuated hourly. During the same period in 2019, there were more than 124,000 searchable job ads. Furthermore, in 2013, a search using the keyword *Design* and no other search settings returned more than 15,000 listings.

In 2019 the same procedure saw *Design* return more than 19,000 listings. Table 37 displays the job search results for 2013 and 2019.

Table 37

Search Term results for 2013 and 2019

Search Term Results for *seek.com.au*			
Search Term	2013	2019	+ /-
Design	15,000	19,000	+4,000
Designer	2,600	2,700	+100
Builder	2,100	2,950	+850
Manager	48,000	48,000	0
Teacher	3,500	2,700	-800
Total searchable job ads	120,000	124,000	+4,000

The search term designer returned 2,600 job listings in 2013 and 2,700 in 2019. A similar search for builder returned 2,100 job listings in 2013 and 2,950 in 2019. The term, manager, returned 48,000 for both 2013 and 2019 and a search for teacher listed 3,500 jobs in 2013 and 2,700 in 2019.

In 2013 and 2019, testing on the *seek.com.au* website showed no listings were available to a single user after 200 pages, thus providing access to 4,000 job ads plus feature ads on selected pages.

Each page of the *seek.com.au* website displayed the titles and previews of approximately 20 job ads. There were two feature ads on the initial 20 pages of the website and, occasionally, other selected pages. Furthermore, the feature ads were almost static and did not change as dynamically as the rest of the job listings. Thus, the feature ads were not part of the sample frame.

In 2013 the target sample was n=400 job ads from the 15,000 listings. Thus, there was a similar target for 2019. However, it was impossible to 'freeze' a snapshot of the ads for the content analysis and achieve an entirely random sample. Thus, a systematic random sample (SRS) of every 37 job ads was activated (17th and 20th listings) for 200 pages (Jervis & Brand, 2014).

6.4 Data Collection

In the 2013 study, two postgraduate research assistants served as coders. They trained with the researcher and her supervisor during an entire morning session to define data collection methods and coding definitions and instructions. The training ensured consensus on coding categories and meanings while using the codesheet on *SurveyMonkey*.

To collect the data, the two coders instigated a search procedure for the job ads at the same time and on the same days (30th January and 1st February 2013).

On *seek.com.au*, the job listing pages display titles and brief descriptions. Once the ad was open in full view, the coders or researcher could save a copy of it. However, returning to the list and going to the next ad resulted on the website being 'refreshed' and consequently, the order of job listings changed.

A solution was to use the *Open Link in New Tab* option in the Chrome browser window. Once the ads were digital PDF files on the computer, the additional tab was closed. A return to the original webpage could occur without any automatic 'refresh' activation on the website.

In 2013, each coder collected data from either an odd or even page. The 17th and 20th listings were 'printed' from the web browser and saved to a PDF format (digital copy) from the print options dialogue box.

In 2019, the researcher was responsible for the collection and coding of the data. The researcher followed the same data collection process from 2013, except the data collection date was 15th January 2019.

The target sample for 2013 and 2019 was 400 job ads per collection. The following section explains the sample adjustment for Study Three.

6.5 Sample

There were six years between the data collections; therefore, the researcher began Study Three by reviewing the data from 2013.The first step was to export the 2013 *SurveyMonkey* codebook, with all the analysis information, to a *Microsoft Excel* spreadsheet.

The researcher examined each job ad in the 2013 spreadsheet and compared the information with the digital copies of the 2013 job ads in her possession. To ensure accurate results, each instance of job ad data in the 2013 spreadsheet needed to have a corresponding digital PDF file for verification.

Unfortunately, the researcher found that many of the 2013 digital PDF files of the job ads were missing from the copies folder. Too much time had passed for the researcher to track any missing PDFs from the 2013 coders. The researcher is aware that she should have checked the data transfer more thoroughly at the time of handover. Overall, there were 70 discrepancies between the spreadsheet information and digital copies of the job ads. Therefore, the sample size for 2013 became 330 job ads.

Study Three continued with the reduced sample size for 2013. The 2019 study had data for 400 job ads with corresponding PDF files. A systematic reduction method reduced the 2019 sample, so it matched the 2013 sample.

The systematic reduction process for the 2019 data was:

1. Divide the sample difference (70) into 400; the resulting number was 5.71.
2. In a spreadsheet copy of the 2019 data, starting with the top row, delete every sixth job ad in the spreadsheet.
3. The result was a 2019 sample of n=330.

Thus, although reduced from the original 400 job ads, Study Three's final sample was job listings from *seek.com.au* of n=330 for both 2013 and 2019, a total of 660 job ads.

The results for Study Three follow in 6.6.

6.6 Study Three Results

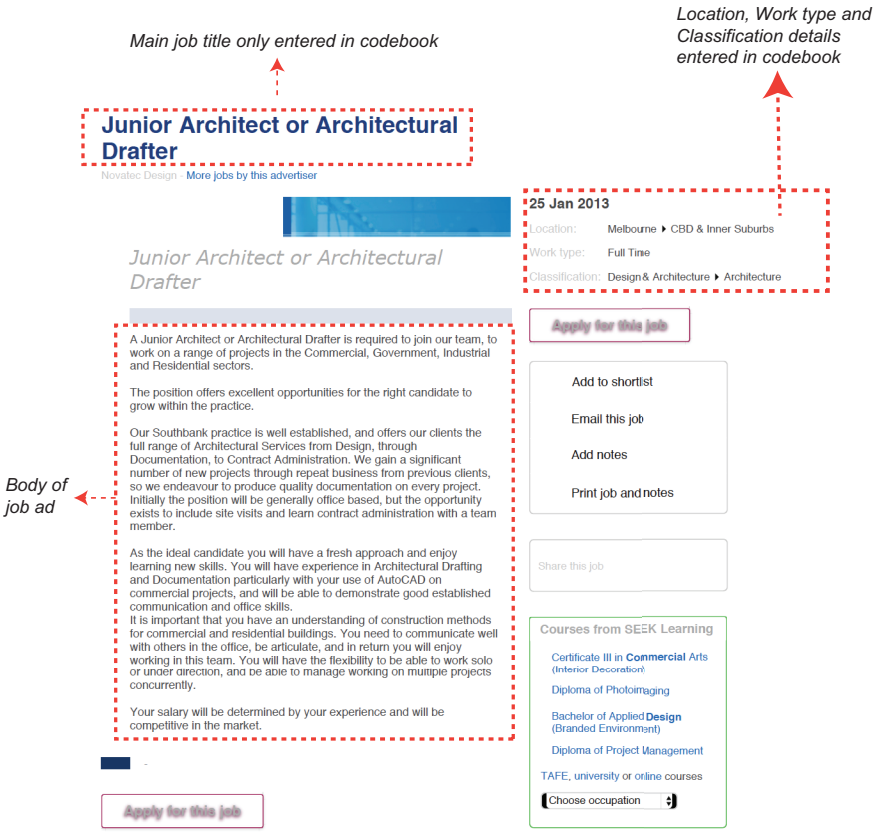
A consistent visual layout within the job ads enabled logical points for analysis. These were the leading *Job Titles*, the *Location*, *Work Type* and *Classifications*—the coder was then responsible for scanning the body of the job ads to answer codebook questions.

The following results are from an analysis of how these particular job ads afforded opportunities for *Design* and business. The variables analysed in the following sections included: job classifications (6.6.1 and 6.6.2), location and classification (6.6.3), occurrences of *Design* in the job ads (6.6.4), *Design Thinking* (6.6.5), *Human-centred Design* (6.6.6), Creativity (6.6.7), Innovation (6.6.8), type of *Design* work (6.6.9), job responsibilities (6.6.10) and 6.6.11 presents a qualitative view of how Design appears in the job ads.

Figure 34 shows a typical layout for the job ads and the areas identified for analysis.

Figure 34

Job Ad Example and Areas of Analysis from 2013



Only the areas circled by a red dotted box applied to Study Three.

6.6.1 *Job Classifications*

The *seek.com.au* website classifies all job listings under one of 30 pre-defined job classifications, as well as multiple sub-classification options. In the job example (Figure 34), the job classification was *Design & Architecture* and the sub-classification was *Architecture*.

Table 38 shows 26 of the 30 job classifications that were active for 2013 and 2019 and the increase or decrease of their respective opportunities.

Table 38

Job classifications 2013 and 2019

	Job Classifications seek.com.au	2013	2019	Net Change 2013 - 2019
1	Accounting	3	3	
2	Administration & Office Support	2	7	+5
3	Advertising, Art & Media	5	5	
4	Banking & Financial Services	1	3	+2
5	Call Centre & Customer Service		1	+1
6	Community Services & Development		4	+4
7	Construction	13	16	+3
8	Consulting & Strategy	3	3	
9	*Design & Architecture*	47	32	-15
10	Education & Training	4	17	+13
11	Engineering	67	69	+2
12	Government & Defence	8	12	+4
13	Healthcare & Medical	3	3	
14	Hospitality & Tourism	1	5	+4
15	Human Resources & Recruitment	6	12	+6
16	Information & Communication Technology	88	78	-10
17	Insurance & Superannuation	1		-1
18	Legal	0	1	+1
19	Manufacturing, Transport & Logistics	7	7	
20	Marketing & Communications	18	11	-7
21	Mining, Resources & Energy	23	7	-16
22	Real Estate & Property	3	3	
23	Retail & Consumer Products	13	5	-8
24	Sales	4	14	+10

	Job Classifications seek.com.au	2013	2019	Net Change 2013 - 2019
25	Science & Technology	2	2	
26	Trades & Services	8	10	+2
	Total	330	330	

Throughout the Study Three coding process, for both 2013 and 2019, the job classifications found on *seek.com.au* were recorded as explicitly stated. As manual entry is time-consuming, the 30 job classifications became codebook selection options. The study found no difference between the available list of job classifications in the 2013 sample and 2019 data.

The results show that, of the 30 job classifications, four were unused in either 2013 or 2019, these were:

1. *CEO & General Management*
2. *Farming, Animals & Conservation*
3. *Self-Employment*
4. *Sports & Recreation*

Furthermore, three job classifications in 2019 were not active in 2013. These were:

1. *Call Centre & Customer Service*
2. *Community Services & Development*
3. *Legal*

Conversely, the job classification, *Insurance & Superannuation,* was present in 2013 but was not active in the 2019 job ads.

The classification, *Information & Communication Technology,* headed the most significant number of jobs for 2013 and 2019. In 2013, 88 job ads (27%) and 78 job ads (24%) in 2019 used this classification.

Second, the classification of *Engineering* offered 67 jobs (20%) for 2013 and 69 job ads for 2019 (21%). *Design & Architecture* was rated third with 47 job ads for 2013 (14%) and 32 job ads for 2019 (10%).

Overall, 14 job classifications showed an increase in opportunities for 2019 from those on offer in 2013. The greatest increase was 13 other job ads (4%) under *Education & Training.* The most noticeable decrease was under *Mining, Resources & Energy* that offered 16 fewer job ads (5%) in 2019. This decrease was followed closely by *Design & Architecture* with a reduction of 15 job ads (5%). Generally, five classifications showed a decrease in job listings.

6.6.2 *Job Sub-Classifications*

The number of options for sub-classifications on *seek.com.au* was substantially higher than the 30 main classifications. It was not feasible to predetermine these sub-classifications in the codebook; thus, manual entry was necessary. The two postgraduate coders entered the sub-classifications as explicitly stated in 2013 and the researcher entered the data in 2019.

The results show that there were 115 sub-classifications in 2013 and 104 in 2019.

Overall, there were 49 unique sub-classifications for 2013 and 38 for 2019, with 66 sub-classifications in common for the two years. Table 39 shows the results for the common sub-classifications for 2013 and 2019. Table 39 sits across three pages. A complete list of the sub-classifications for 2013 and 2019 appears under Appendix F.

Table 39

Sub-classifications, Number of Job Ads 2013–2019

	Sub-classifications	2013	2019	Net Change 2013-2019
1	Administrative Assistants	1	2	+1
2	Architects	10	6	-4
3	Architectural Drafting	6	5	-1
4	Architecture	8	6	-2
5	Art Direction	1	1	
6	Assistant Accountants	1	1	
7	Automotive Trades	2	1	-1
8	Brand Management	2	1	-1
9	Building Services Engineer / Engineering	5	7	+2
10	Business/Systems Analysts	6	12	+6

	Sub-classifications	2013	2019	Net Change 2013-2019
11	Buying	1	1	
12	Carpentry & Cabinet Making	1	1	
13	Chefs/Cooks	1	5	+4
14	Civil/Structural Engineering	23	28	+5
15	Consultants	5	4	-1
16	Consulting & Generalist HR	2	4	+2
17	Database Development & Administration	2	1	-1
18	Developers/Programmers	18	17	-1
19	Digital & Search Marketing	2	1	-1
20	Electrical/Electronic Engineering	17	9	-8
21	Electricians	2	1	-1
22	Engineering - Network	6	7	+1
23	Engineering - Software	5	8	+3
24	Engineering Drafting	7	10	+3
25	Estimating	4	3	-1
26	*Fashion & Textile Design*	3	4	+1
27	Field Engineering	1	1	
28	Foreperson/Supervisors	2	2	
29	Government - Federal	1	1	
30	Government - Local	1	4	+3
31	Government - State	4	7	+3
32	*Graphic Design*	6	5	-1
33	Help Desk & IT Support	1	1	
34	*Industrial Design*	3	2	-1
35	*Interior Design*	5	4	-1
36	Landscape Architecture	1	1	
37	Management	9	6	-3
38	Marketing Assistants/Coordinators	4	3	-1
39	Marketing Communications	1	3	+2
40	Mechanical Engineering	2	5	+3
41	Mining - Drill & Blast	1	1	
42	Mining - Engineering & Maintenance	7	4	-3
43	Mining - Exploration & Geoscience	2	1	-1
44	Networks & Systems Administration	4	1	-3
45	Organisational Development	1	2	+1
46	Other	16	18	+2
47	Photography	1	1	

	Sub-classifications	2013	2019	Net Change 2013-2019
48	Physiotherapy, OT & Rehabilitation	1	1	
49	Production, Planning & Scheduling	1	2	+1
50	Programme & Project Management	3	4	+1
51	Project Engineering	1	4	+3
52	Project Management	3	5	+2
53	Retail & Property Development	1	2	+1
54	Retail Assistants	4	3	-1
55	Sales - Pre & Post	1	3	+2
56	Sales Coordinator	1	1	
57	Sales Representatives/Consultants	4	6	+2
58	Security	2	2	
59	Systems Engineering	1	3	+2
60	Teaching - Vocational	1	1	
61	Team Leaders	1	1	
62	Training & Development	2	3	+1
63	*Urban Design & Planning*	3	1	+2
64	*Web & Interaction Design*	11	4	-7
65	Web Development & Production	5	5	
66	Workplace Training & Assessment	1	2	+1
		261 (79%)	272 (82%)	

Of the 66 sub-classifications in common, 17 had no changes between 2013 and 2019. There were six *Design*-related sub-classifications:

1. *Fashion & Textile Design*
2. *Graphic Design*
3. *Industrial Design*
4. *Interior Design*
5. *Urban Design & Planning*
6. *Web & Interaction Design*

In 2019, *Fashion & Textile Design* increased by one job. *Graphic Design*, *Industrial Design* and *Interior Design* all decreased by one position each. The sub-classification *Urban Design & Planning* increased by two jobs. However, *Web & Interaction Design* fell by seven from 11 in 2013 to four in 2019.

6.6.3 *Number of Jobs per Location with Classifications*

An analysis of the number of jobs listed in Australia on *seek.com.au*, for 2013 and 2019 showed that Sydney had the most job opportunities for both years. Although in 2013, there was only a difference of six jobs. By 2019, the difference was 35 job listings in favour of Sydney.

In the following, Table 40 displays the Australian cities with the most significant number of jobs posted for both 2013 and 2019.

Table 40

Location and Number of Jobs Listed for 2013 and 2019

Location	2013 Jobs Listed	2019 Jobs Listed	Net Change 2013-2019
Adelaide	12	12	
Brisbane	48	36	-12
Canberra	2	10	+8
Darwin		3	+3
Gold Coast	3	3	
Hobart		1	+1
Melbourne	90	86	-4
Perth	42	24	-18
Sydney	96	121	+25
Regional ACT	6		-6
Regional NSW	9	17	+8
Regional NT			
Regional QLD	13	6	-6
Regional SA		2	+2
Regional VIC	3	7	+4
Regional WA	4	2	-2
Overseas / Other	2		-2
Total	330	330	

Table 40 shows that in 2019 Melbourne had four fewer job opportunities than the number of listings recorded in 2013. Job numbers for Sydney in 2019 grew by 25 listings.

Overall, jobs numbers increased in Sydney, followed by Canberra and Regional New South Wales, each with eight jobs.

Then, in decreasing order, Regional Victoria had an extra four jobs in 2019. Darwin had three and Regional South Australia had two. Brisbane and Perth and all other locations had a decrease in numbers for 2019 from 2013.

In Sydney for 2013 and 2019, the most significant number of jobs were listed under *Information & Communication Technology*, followed closely by *Design and Architecture* and *Engineering*. For Sydney, these three classifications showed an increase in the number of job listings in 2019.

However, in Melbourne, the classification *Information & Communication Technology* went from 28 jobs in 2013 to 19 jobs in 2019. *Design and Architecture* had a drop of 14 listings in Melbourne from 20 jobs in 2013 to six in 2019. Furthermore, Melbourne included the following additional eight classifications in 2019:

1. *Administrating & Office Support*
2. *Advertising, Art & Media*
3. *Community Services & Development*
4. *Government & Defence*
5. *Hospitality & Tourism*
6. *Legal*
7. *Sales*
8. *Trades & Services*

Melbourne had one less classification in 2019 from 2013: *Mining, Resources & Energy*. Sydney, however, added two classifications: *Call Centre and Real Estate & Property* but also reduced two: *Insurance & Superannuation* and *Science & Technology*.

See Table 41 below for a list of all classification for jobs posted in 2013 and 2019 for Sydney and Melbourne. The top two classifications for both cities are *Information & Communication Technology* and *Engineering*. In addition, for both cities, there was slight growth evident in *Education & Training*, *Government & Defence* and *Human Resources & Recruitment*.

Table 41

Job Classifications for Sydney, Melbourne, 2013 and 2019

Classifications	Sydney		Melbourne	
	2013	2019	2013	2019
Accounting	2	1	1	2
Administrating & Office Support	1	2		2
Advertising, Art & Media	4	3		1
Banking & Financial Services	1	3		
Call Centre		1		
Community Services & Development				2
Construction	2	11	6	3
Consulting & Strategy	1	2	1	1
Design & Architecture	12	19	20	6
Education & Training	2	5	2	7
Engineering	11	15	16	19
Government & Defence	1	3		2
Healthcare	2	1		
Hospitality & Tourism				3
Human Resources & Recruitment	2	5	3	4
Information & Communication Technology	33	35	28	19
Insurance & Superannuation	1			
Legal				1
Manufacturing, Transport & Logistics	2	1	2	1
Marketing & Communications	7	5	5	4
Mining, Resources & Energy			2	
Real Estate & Property		2	1	1
Retail & Consumer Products.	6	2	3	2
Sales	1	4		5
Science & Technology	2			
Trades & Services	3	1		1
Total Jobs	96	121	90	86

Section 6.6.4 looked at the frequency with which *Design* appeared anywhere in the job ads (6.6.1). Understanding the distribution and frequency of a word is fundamental to content analysis. A person will use a word more if it has meaning for them (Dicle and Dicle, 2018).

6.6.4 *Frequency of Design in Job Ads*

In 2013 the word *Design*, designer, designing or designed appeared somewhere in 321 (97%) of the job ads. In 2019, *Design* was in 325 (99%) of the job ads. In 2013, nine job ads (3%) did not mention the word *Design* and five (2%) job ads in 2019.

Table 42 provides a general summary of the number of times *Design* and its word extensions appear in the titles and body of the job ads for 2013 and 2019.

Table 42

Summary of design in Job Ad Titles and Body

Description	2013 (n =330)	2019 (n=330)	2013 – 2019 Net Change
Job ads with *Design*, designer, designing or designed in titles and body of the job ad.	90 (27%)	77(23%)	-13
Job ads with *Design*, designer, designing or designed in title only	92 (27%)	78 (24%)	-14
Job ads with *Design*, designer, designing or designed in body only	229 (69%)	246 (75%)	+17
No mention of *Design*, or associated words, in the job ads	9 (3%)	5 (2%)	-4

In 2013, *Design,* or one of its extensions, appeared 90 times (27%) in both the job ads' title and body. In 2019, the number of occurrences was 77 times (23%). Similarly, in the title only, the terms occurred 92 times (27%) in 2013 and 78 (24%) in 2019. Likewise, the appearance of design in just the body (not anywhere else in the ad) was 229 (69%) in 2013 and 246 (75%) in 2019.

In contrast, an examination of explicitly stated words provided the following results. Table 43 displays the occurrences for words: *Design*, Designer, *Design* and Designer and Designed, explicitly stated in the job titles.

Table 43

Design, Designer and Designed in Job Ad Titles

Explicitly Stated in Titles	2013 (n=330)	2019 (n=330)	2013 – 2019 Net Change
Design	54 (16%)	48 (15%)	-6
Designer	38 (12%)	28 (9%)	-10
Design and Designer	1 (0.3%)		
Designed		1 (0.3%)	+1

In 2013, 54 job ad titles (16%) explicitly stated *Design*. One job ad used *Design* twice with the title: *Design* Lead // Head of *Design.*

In 2019, *Design* was specified in 48 job ad titles (15%) and had one title in which *Design* appeared twice: *Design Manager | Mid-Tier Builder | Strong, Established Design Team*.

Similarly, in 2013, there was one job ad that combined both design and designer in the title: *Residential Designer - Are you a Draftsperson looking to get into design?*

Otherwise, the remaining 2013 and 2019 titles all refer to one use of either *Design*, designer or designed.

The term designer appeared in 38 job ads (12%) for 2013 and 28 (9%) of the titles for 2019. For 2013, there were two instances of designer appearing twice in a title, namely: *Graphic Artist / Digital Designer | Web Designer and Graphic Designer | Web Designer*.

There was no double use of designer in the 2019 titles. The only exception in 2019 was the term designed, which appeared once in the title: *Team Leader - join our team in a new architectural designed disability house*. Section 6.6.2 continues the analysis with *Design Thinking* in the job ads.

6.6.5 *Design Thinking*

This section presents the number of job ads that explicitly state the term *Design Thinking* and how prospective employers integrated the term throughout their job ads for 2013 and 2019. Table 44 shows the limited number of *Design Thinking* occurrences for both years.

Table 44

Occurrences of Design Thinking in Job Ads

	2013	2019	+/-
Design Thinking in title of job ads			
Design Thinking in body of job ads	1	6	+ 5

There were no occurrences of *Design Thinking* in the job ad titles for either 2013 or 2019. The single job ad that mentioned *Design Thinking* in 2013 occurred in the body of the ad. The job classification was *Consulting & Strategy* and the job title was *Senior Executive Designer*.

There were no occurrences of *Design Thinking* in the job ad titles for either 2013 or 2019. In 2013, the single job ad that mentioned *Design Thinking* occurred in the body of the ad. The job classification was *Consulting & Strategy* and the job title was *Senior Executive Designer*. In this job ad, the term *Design Thinking* appeared once only, at the beginning of the job description. It stated, "a great opportunity to apply *Design Thinking* and innovation in government".

By comparison, *Design Thinking* appeared in the body of six job ads in the 2019 sample. Table 45 displays the six 2019 job titles and their job classifications.

Table 45

Design Thinking in 2019 Job Ads

	2019		
	Job Title	First Classification	Second Classification
1	Associate Director - Customer, Brand & Marketing Advisory	*Information & Communication Technology*	*Communication, Advertising / Marketing*
2	Manager, Customer Experience Delivery	*Education & Training*	*Other*
3	Scaled Agile Business Analysts	*Information & Communication Technology*	*Business/Systems Analysts*
4	Senior Marketing Manager	*Marketing & Communications*	*Marketing Communications*
5	User Experience & Interface Designer	*Government & Defence*	*Multimedia / Web Design (digital publication)*

2019			
6	UX Designer	*Design & Architecture*	*Web & Interaction Design*

In the first 2019 job, *Associate Director - Customer, Brand & Marketing Advisory*, requests the applicant to:

> Provide clients with strategic, financial and commercial advice, including insights and recommendations enabled by Customer Experience methodologies such as *Design Thinking* and *Human-centred Design*, structured thinking, other technical knowledge and exceptional communication skills.

The second position is within the academic sector. This job had had the most occurrences of *Design Thinking* and also referred to it as a *Design Thinking* Pipeline:

> The role is responsible for the delivery of the University's Customer Experience and *Design Thinking* Pipeline, support of digital strategy and 2IC to the Senior Manager, Customer & User Experience.

Plus,

> Work in collaboration with business units to lead service improvements, capability and cost reductions, drive innovation, *Design Thinking* and improve student and industry experiences with a specific focus on designing experiences.

Also,

> Proven strong record of achievement in leading customer experience, user experience, *Design Thinking* and lean practices across a complex organisation with a service delivery focus.

The third job, *Scaled Agile Business Analysts,* stated: "A good understanding of UX/ *Design Thinking* is desirable."

The fourth 2019 job, *Senior Marketing Manager,* placed *Design Thinking* as:

> Being customer-centric, champion the best experience for customers and use design thinking approaches to deliver innovative and creative solutions.

The fifth job, *User Experience & Interface Designer,* was a position under Government & Defense. The applicants were required to have:

> Significant experience in applying *Human-centred Design*, *Design Thinking* and/or lean start-up to design and prototype new products and services.

The last job, number six, *UX Designer,* required:

> Strong experience applying user experience principles and practices, including *Design Thinking* methodology, heuristics, requirements gathering, information architecture.

Most of the jobs requesting *Design Thinking* focused on improving a situation but only one of the job ads appeared under the *Agriculture & Design* classification. However, two of the six references to *Design Thinking* also referred to *Human-centred Design*.

6.6.6 *Human-Centred Design*

Human-centred Design emerged because of the concept's close association with *Design Thinking* (Brown, 2008). Two of the job ads previously identified with *Design Thinking* refer to *Human-centred Design*. Nevertheless, there was no mention of *Human-centred Design* in any job ads for 2013 (0%). One job ad mentioned *Human-centred Design* without stating *Design Thinking*. Overall, there were three jobs in 2019 that cited *Human-centred Design*. See Table 46.

Table 46

Human-Centred Design in Job Ads for 2019

2019			
	Job Title	First Classification	Second Classification
1	Associate Director - Customer, Brand & Marketing Advisory	*Information & Communication Technology*	*Communication, Advertising / Marketing*
2	User Experience & Interface Designer	*Government & Defence*	*Government - State*
3	Digital Product Manager	*Marketing & Communications*	*Product Management & Development*

The following section presents the results from an examination of creativity in the job ads.

6.6.7 *Creativity*

In 2013 there were six occurrences of creative in the titles of the job ads and all of them explicitly used the word creative (not creativity). Table 47 presents the six titles with their job classifications.

Table 47

Creativity in Job Ads 2013

Creativity in Job Ads 2013		
Job Title	Classification	Sub-classification
Creative Assistant Sales	*Marketing & Communications*	*Event Management*
Creative Production Co-ordinator	*Marketing & Communications*	*Brand Management*
Creative! Senior Front-End Developer (HTML 5, CSS 3, JQuery)	*Information & Communication Technology*	*Developers/ Programmers*
Multi-disciplined Creative/Designer	*Design & Architecture*	*Graphic Design*
Print Designer, Foxtel Creative	*Advertising, Art & Media*	*Programming & Production*
Project Coordinator | Creative Industry	*Design & Architecture*	*Industrial Design*

In contrast, 27 job ads (8%) of the 2013 sample included the words creative or creativity in the body of the ads. However, in 2019, only one title explicitly stated *creative.* See Table 48.

Table 48

Creativity in Single Job Ad 2019

Creativity in Job Ad 2019		
Job Title	Classification	Sub-classification
Creative Director	*Design & Architecture*	*Graphic Design*

In 2019, 20 of the job ads (6%) included the words *creative* or *creativity* in the body of the text. Similarly, in the next section (6.6.4), the word innovation is examined in the job ads.

6.6.8 *Innovation*

The word 'innovate' or 'innovation' did not appear in any job titles for 2013 or 2019. In 2013, it was present in the body of 16 (5%) of the sample and 2019 in the body of 22 (7%) the ads. There was no evidence of the word innovation in either the 2013 or 2019 job ads. Next, the results look at the type of *Design* work on offer, followed by job responsibilities.

6.6.9 *Design Work Type*

Overall, there were five categories on *seek.com.au* for the type of work available in the job ads: *Contract/Temp*; *Full Time*; *Part Time*; *Casual/ Vacancy* and *Full Time/ Contract Temp*.

In 2013, some 265 job ads requested *Full Time* employment (80% of the study sample), 53 asked for *Contract/Temp* (17%), eight for *Part Time* (2%) and four for *Casual /Vacancy* employees (1%).

In 2019 there were 270 job ads for *Full-Time* employment (82%), an increase of five since 2013. There was a decrease of five in *Contract /Temp* jobs with 49 for 2019 (15%). Six job ads for *Part Time* (2%) compared to eight in 2013 and no change for *Casual/ Vacancy* (1%) with four jobs.

In 2013, of the 92 job titles with *Design* or *designer,* 77 requested *Full Time* employees, equating to 84% of the job title number and 24% of the sample. There were 13 job ad requests for *Contract /Temp* and one request for *Part Time* and *Casual /Vacancy.*

In 2019, 65 of 78 job ads with *Design* in the titles sought *Full Time* employees. This request for *Full Time* workers equated to 83% of the jobs or 20% of the sample. There were nine job requests for *Contract/Temp* workers, two for *Part Time* and one *Casual /Vacancy*. An additional category, *Full Time / Contract / Temp*, appeared in 2019 but was not present in 2013.

6.6.10 *Job Responsibilities*

The coding process for 2013 and 2019 involved reading the job ad and assigning areas that responded in the codebook variables.

For example, if the job ad listed a requirement as "Work collaboratively with key stakeholders to…" the coder would assign the codebook variable *Work Collaboratively*.

In 2013, overall, there were 132 job ads (40%) with coding under the variable Manage/Coordinate/Lead ... Teams / Others. In 2019, the total for this variable was 119 or (36%).

A vast majority of the job ads made general requests for communication skills. Others explicitly stated written or verbal communication requirements. Of the 2013 sample, 158 (48%) asked for *Communication Skills*, 69 (21%) *Verbal Skills* and 83 (25%) *Writing Skills*.

In 2019, for the *Communication Skills* variable, there were 176 jobs (53%), for *Verbal Skills*, 56 (17%) and 68 (20%) *Writing Skills*. See Table 49.

Table 49

2013 Codebook Variables for Listed Job Responsibilities

Codebook Variable	2013 (n=330)	2019 (n=330)	Net Change 2013-2019
Manage/Coordinate/Lead...Teams/ Others	132 (40%)	119 (36%)	-13
Communication Skills	158 (48%)	176 (53%)	+18
Verbal Skills	69	56	-13
Writing Skills	83	68	-15

The final section of Study Three results (6.6.11) reviews the way that the job ads used *Design* as a part of speech.

6.6.11 *Wording of Design in the Job Ads. A Qualitative View*

The purpose of this section was to understand how businesses used *Design* in the language of their job ads. This section focused on the analysis of jobs listings that included *Design* or designer in their job titles.

Thus, the sample became n=92 job ads in 2013 and n=78 for 2019, all with *Design* or designer in their titles.

The investigation showed that job ads had commonly occurring divisions and some consistent wording. Overall, the researcher identified eight regularly appearing sections in the *Design* job listings:

1. The role or type of position
2. The place of employment
3. Job obligations or capabilities
4. Responsibilities of the role
5. Experience required
6. Qualifications
7. Job specialisation
8. The applicant's expertise

Thus, for the analysis, a word category was implemented to identify each of the sections, which became:

1. Role
2. Place
3. Capabilities
4. Responsibilities/ *Design*
5. Experience
6. Qualifications
7. Specialisation
8. Expertise

To further assess the importance of *Design* to management and the frequency of requests for *Design Teams* in business, two additional sections, *Design Directors/ Management* and *Design Team,* made ten categories for investigation.

See Table 50 for an example of the sections and their description.

Table 50

Final Word categories in Job Ads

	Categories	**Job Expectations**
1	Responsibilities / *Design* (Verb)	What *Design* tasks are expected?
2	Role (Noun)	*Design* is used in relation to a person, i.e., *Design* Engineer
3	Specialisation	Where the word *Design* is related to a specific area i.e., graphic *Design*
4	Experience	*Design* experience, a job requirement
5	Capabilities	What *Design* competencies are required
6	Expertise	Skills the person has in *Design*
7	Place	Location, such as a *Design* studio
8	*Design* Team	When the role requires the person to be part of a *Design* team
9	Qualifications	Qualifications are required
10	*Design* Directors/ Management	Where the role is management or higher

The researcher analysed every job ad to identify occurrences of *Design*. Each identification of the word *Design* was selected, copied and then pasted into a *Microsoft Excel Spreadsheet* and placed under an appropriate 'category' heading. The nature of the job ads meant that the amount of text copied surrounding *Design* could not be pre-determined, i.e., five words either side of *Design*. However, the selection included as many words on either side of *Design* as possible. The aim was to ensure that 'reading' a spreadsheet 'row' would provide a clear understanding of the *Design* job context.

Table 51 shows text copied from a job ad. The job title was, *Design Manager Civil/Structural Engineer*.

The text corresponding to a category appears in a 'cell' with one of the pre-determined word categories applied to each section of *Design*.

Table 51

Design Wording and Assigned Job Ad Word Category

Job Title: *Design Manager Civil/Structural Engineer*				
Role	*Expertise*	*Capabilities*	*Responsibilities*	*Experience*
Design Manager Civil/Structural Engineer	as a leader in engineering and architectural *Design* excellence.	ability to present cost effective *Design* solutions for major civil	understanding of aspects of the *Design* process on major engineering projects.	proven knowledge of the construction process and solid experience in *Design* management.

In 2013, two listings used *Design* or designer in the title. They did not include *Design* or reference *Design* anywhere else in the ad. These two titles were:

1. *Buyer Construction - Construction & Interior Design*.
2. *Civil 12D Designer | $99,000 to $80,000*.

The remaining jobs in 2013 and 2019 made some reference to *Design* in the body of the text. However, for both years, the number of *Design* mentions per job listing varied dramatically. In 2013, there was a job ad with a *Design* related title and one mention in the body of the ad. Then another title with *Design* that had twenty mentions of *Design* in the body of the ad.

In 2019, there was a job ad with a *Design* related title and 22 mentions in the body of the ad. The average number of *Design* mentions per job ad for 2013 was a title plus six mentions and for 2019, the average number was a title and five *Design* mentions in the body.

Table 52 displays the numbers of sections talking about *Design* in the job ads for 2013 and 2019 in addition to the job title. Neither of the years recorded a title plus 16 sections, a title and 18 sections or a title and 19 sections.

Table 52

Job Ads with Design in Titles and Sections

Design mentions/ sections	2013 (n=92)	2019 (n=78)
Title only	2	
Title plus one *Design*	4	4
Title plus two *Design*	14	3
Title plus three *Design*	11	9
Title plus four *Design*	12	8
Title plus five *Design*	10	10
Title plus six *Design*	13	5
Title plus seven *Design*	7	10
Title plus eight *Design*	6	7
Title plus nine *Design*	3	3
Title plus ten *Design*	1	5
Title plus 11 *Design*	2	4
Title plus 12 *Design*		3
Title plus 13 *Design*	1	2
Title plus 14 *Design*	2	3
Title plus 15 *Design*	2	1
Title plus 17 *Design*	1	
Title plus 20 *Design*	1	
Title plus 22 *Design*		1

Overall, for 2013 and 2019, the most significant section of these job ads proved to be *Responsibilities / Design,* followed closely by the advertised job *Role.* Table 53 follows how *Design* is a part of speech in the job ads for 2013 and 2019.

Table 53

Parts of Speech Design Categories

	Word Categories	2013 (n=92) Section Percentage of Job Ads	2019 (n=78) Section Percentage of job ad
1	Responsibilities /*Design* (Verb)	26%	31%
2	Role (Noun)	25%	21%
3	Specialisation (Noun)	12%	10%
4	Experience (Noun)	10%	8%
5	Capabilities (Noun)	7%	8%
6	Expertise (Noun)	7%	6%
7	Place (Noun)	5%	4%
8	*Design* Team (Noun)	4%	6%
9	Qualifications (Noun)	2%	4%
10	*Design* Directors/ Management (Noun)	1%	1%

The predominant focus in the job ads, for both years of the study, was *Responsibilities / Design*. As a part of speech, the word *Responsibility* is a noun; however, for this study, *Responsibilities* / *Design* represented actions or things the applicant was accountable for on the job; thus, this section aligned with *Design* as a verb. For example:

- You will be required to assist within a team of other designers on major projects, e.g., designing, preparing documentation packages as well as liaising with consultants & suppliers etc.
- Ensure that *Design* change control processes are effective.
- Prepare *Design* budgets and time schedules.
- Acts as the primary contact and project lead for large and complex *Design* and construction projects.

In 2013, the section *Responsibilities* / *Design* was 26% of the job ad sample. In 2019, this became 31%.

The second most extensive section also applied to both 2013 and 2019 and advertised the job *Role*. The nature of a role is a job position; therefore, this section, the *Role*, was considered a noun.

Overall, *Role* made up 25% of the job listings in 2013 and 31% in 2019. Furthermore, the role of *Design* or designer appeared in 85% of the job titles for 2013 and 83% of titles in 2019. An example of a *Role* would be:

1. *Mid-level Web Designer*
2. *Fibre Designer-VIC*
3. *Senior Electrical/ Instrument Design Drafter*

Two other sections appeared in the titles for both 2013 and 2019: *Specialisation* and *Place* and both related to a noun. In 2013, *Specialisation* was 13% of the titles and similarly, 14% in 2019. Examples include:

1. *Lead/Senior Network Engineer I Presales I CBD Voice/Data Design + PAID Training.*
2. *Head of Discipline Automotive Design.*
3. *Senior Consultant- Organisational Design.*

In the job ads generally, *Specialisation* had a similar percentage with 12% for 2013 and 10% in 2019. The section, *Place*, however, had the least presence in the job ad titles, which was 2% in 2013 and 3% in 2019. *Place* also had a minimal presence in the job ads, generally, consisting of 5% in 2013 and 4% in 2019. Examples of *Design* and *Place* are:

1. *Respected Design House Seeks Signalling Engineer.*
2. *Structural Engineer - Design Consultancy.*
3. *Team Leader - join our team in a new architectural designed disability house.*

Largely, the majority of titles included *Design* as a verb. However, when the sections are combined, the main reference to *Design* is a noun.

There was no change to requests for *Design Directors/ Management* between 2013 and 2019. However, in 2019 there was a slight increase in references to *Design Teams*, an increase in requests for *Design* related *Responsibilities* and more job ads requests for *Qualifications* and *Design Capabilities.* From 2013 to 2019, *Specialisation*, *Experience* and *Expertise* percentages showed a slight decrease.

6.7 Summary

The purpose of Study Three was to shed light on how businesses communicate a view of *Design* through the wording of their job ads. The third study was a content analysis of 660 job ads from *seek.com.au,* a leading online recruitment and career portal for Australia and New Zealand. The job ads were accessed in January 2013 (n=330) and again in January 2019 (n=330). The method used the same standardised codebook for both years. This chapter describes the methods used to access the data and the process for selecting the sample and units of analysis and presents the results from section 6.6.

The results show that in 2013 the highest rating job classification for *Design* was *Information & Technology* in both 2013 and 2019. The second-highest classification was *Engineering*, also applicable to the two years. The top sub-classification, *Civil/ Structural Engineering,* also applied to both 2013 and 2019.

The most significant number of job ads appeared under Sydney. In 2013, only six job listings were separating Sydney and Melbourne. By 2019, the number was 35 extra jobs for Sydney.

Overall, the word *Design* or designer was present in *97%* of the job ads for 2013 and 99% in 2019. However, 3% in 2013 and 2% in 2019 did not mention *Design* anywhere in the job ad.

There were limited occurrences of *Design Thinking,* which was one job ad for 2013 and six in 2019. *Human-centred Design* emerged in association with *Design Thinking*. It did not appear in 2013 but had a presence in three job ads for 2019.

In contrast, the word creativity appeared in 27 job ads for 2013 and 20 job ads for 2019. While innovation was not present in any listings for 2013, it was present in 22 jobs for 2019 (7%).

In 2013, 80% of the jobs offered Full-Time positions and in 2019, the percentage increased to 84%.

Managing and working in teams was requested in at least 40% of the job ads in 2013 and 36% in 2019. Furthermore, communication skills, including verbal and written abilities, were an essential requirement for both years of the study.

The predominant use of *Design*, as a part of speech in both 2013 and 2019, was a noun. However, in 2013, *Design* as a verb was present in 26% of the job ads and 31% in 2019.

The results for Study Three, along with Study One and Study Two, are further analysed in Chapter 7 *Synthesis and Discussion.*

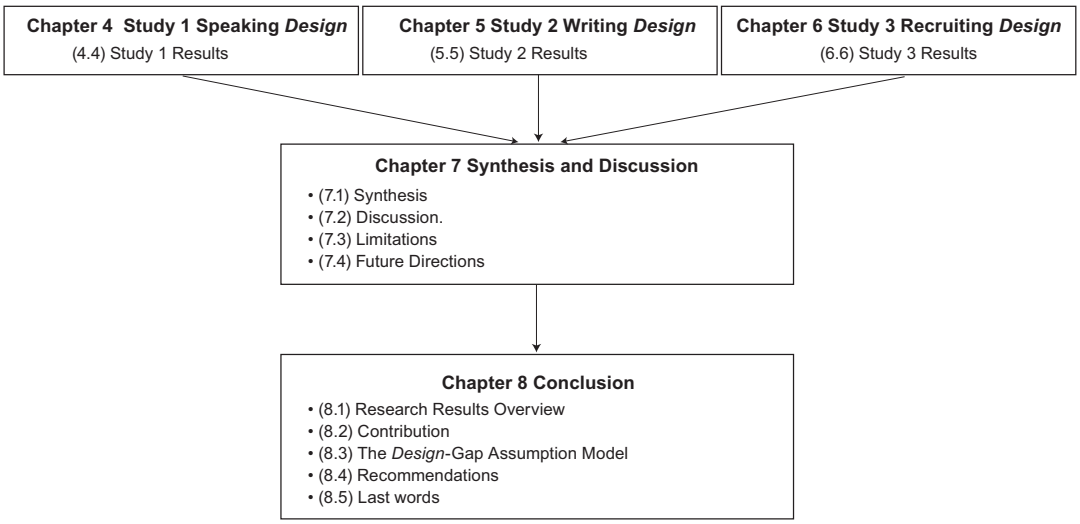
Chapter 7: **Synthesis and Discussion**

Chapter seven presents the results of the three studies that formed the mixed method, convergent parallel research *Design*, which are synthesised and then discussed. The methods and results were chapter-specific, and each responded to a sub-question.

This chapter uses guidelines provided by Creswell and Plano Clark (2017) to synthesise the study results. Figure 35 outlines the main structure for each chapter to illustrate how the three chapter-specific studies integrate into Chapter 7 and Chapter 8.

Figure 35

Chapter Flowchart



7.1 Synthesis

The first step for synthesising mixed methods, recommended by Creswell and Plano Clark (2017), was to identify the qualitative and quantitative data results and then integrate them. The process of integrating qualitative and quantitative data is not commonly understood. However, it is an essential step in bringing together the findings to "produce a whole through integration that is greater than the sum of the individual qualitative and quantitative parts" (Guetterman, Fetters, Cresswell, 2015, p. 555).

Joint displays help communicate the insights emerging from this integration of the results. However, the type of joint display is dependent on the study or studies (Guetterman, Fetters, Cresswell, 2015).

The results from the three studies were extensive, so it was not possible to synthesize and display the mix of qualitative and quantitative data in a single view joint display. Therefore, the data appears in three joint displays under Appendix H: Table 69, *Design Meaning*, Table 70, *Design Communication* and Table 71, *Design Thinking*, *Creativity*, *Innovation* and *Teamwork and Communication*. Each joint display table has three columns and the results show under the headings of *Qualitative Investigation*, *Quantitative Investigation* and then *Convergence.* Figure 36 is a screenshot of Appendix H that shows the column for qualitative data, quantitative data and the convergence of results for the first part of Table 69.

Figure 36

Example of Mixed Method Joint Display under Appendix H

Appendix H

Synthesis Mixed Method Joint Displays

Table 69

Joint Display for Design Meaning

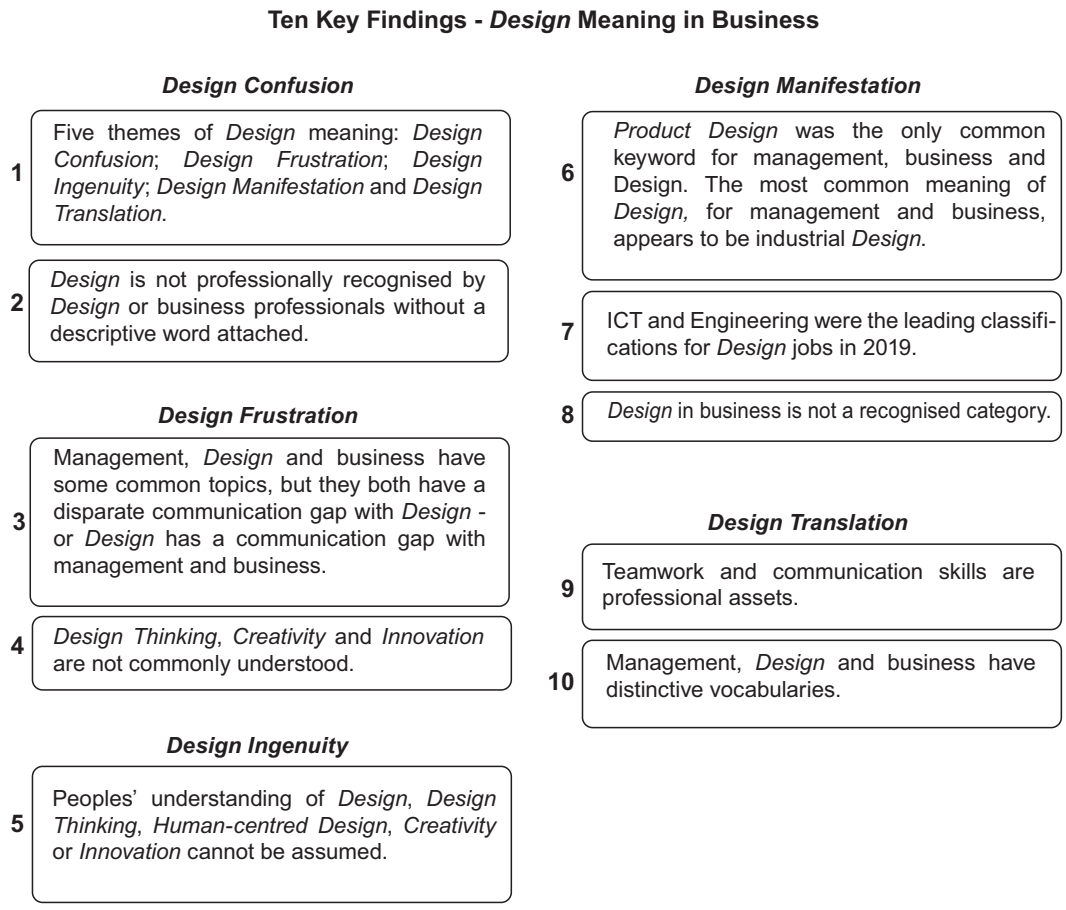
Qualitative Investigation	Quantitative Investigation	Convergence
	***Design* Meaning**	
Design meaning theme, *Design Confusion*: the meaning of *Design* or *Design* related concepts that seem confusing or vague for people. Illustrative Quote: [I feel] "confusion - if someone says the word *Design* - it doesn't evoke any strong feelings one way or another."	In DS, nearly all word combinations and keywords used the word *Design*: for example, *Design Cognition*, *Design problem*, *Design activity Design process*, *Product Design*, *Conceptual Design*.	*Design* meaning theme, *Design Confusion*. In all three studies *Design* required a descriptive word to illustrate its value. The meaning of *Design* was not shared and caused confusion.
Design meaning theme, *Design Frustration*: feeling a sense of frustration that *Design* or *Design* related concepts are not acknowledged. Illustrative Quote: "The best *Design* is invisible. That's what frustrates me [people] still think *Design* is abstract - woo woo - with art and colours - "I am not a designer" it is like I am not an artist".	AMJ and HBR shared six of 20-word combination frequencies: business enterprise; management research; industrial management; personnel management; strategic planning; organizational effectiveness. Neither AMJ nor HBR shared word combinations with DS.	*Design* meaning theme, *Design Frustration* There was a sense of frustration amoung *Design* professionals that *Design* does not receive more acknowledgment. Common interests for AMJ and HBR are business enterprise; management research; industrial management; personnel management; strategic planning and organizational effectiveness. These common interests are not shared with DS or, perhaps, DS does not engage with the interests of management and business.
Design meaning theme, *Design Ingenuity*: the unlimited possibilities and creative ability of human imagination.	The leading keyword for DS was *Design Cognition*, which was followed closely by *Design Process*, *Conceptual Design* and *Design Education* (equal second). AMJ shared three keywords with HBR but none with DS	*Design* meaning theme, *Design Ingenuity*

See Appendix H for a complete view of the joint display of quantitative and qualitative data and convergence.

Under Appendix I, each summary point from Study One, Study Two, and Study Three is converged under one of the themes for *Design* meaning: *Design Confusion*, *Design Frustration*, *Design Ingenuity*, *Design Manifestation* and *Design Translation*. The integration of results aligns with the mixed method, convergent parallel *Design* proposed by Creswell and Plano Clarke (2017) and outlined in Chapter Three. Figure 37 shows a synthesis of the information under Appendix I.

Figure 37

Ten Key Findings Listed Under the Design Meaning Themes



Results are displayed under the five *Design* Meaning themes. See also Appendix I.

In the next step, the synthesis involved aligning the ten points of converged results, with the premises of *Symbolic Interactionism*.

Figure 38 shows each of the *Design* meaning themes with a dotted line aligning it with one of the *Symbolic Interactionist* premises.

Figure 38

Design Themes and Premises of Symbolic Interactionism

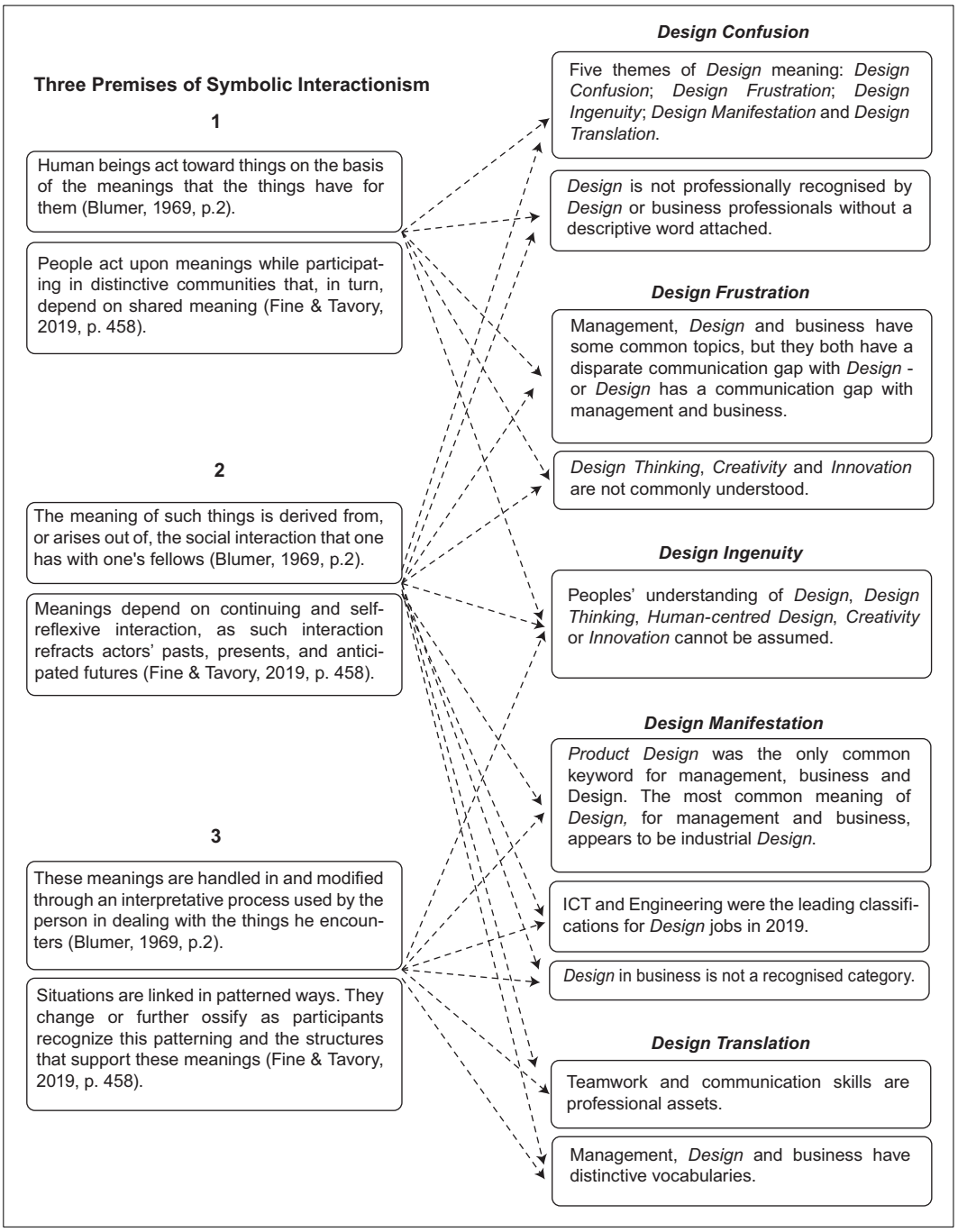


Figure 38 is an overview of the main findings aligned with the three premises of *Symbolic Interactionism* as defined by Blumer (1969) and Fine & Tavory (2019).

In the first premise under Blumer (1969), the meaning of *Design* is considered from a personal perspective. Fine and Tavory (2019), however, extend Blumer to include the communities that we, human beings, belong to and that "depend on shared meaning" (p.458).

In the second premise for *Symbolic Interactionism*, Blumer (1969) states that someone's meaning of *Design* would arise from their social interactions with other people. Fine and Tavory (2019) add that meanings then evolve with continued interactions and self-reflection.

In the third premise, Blumer (1969) brings attention to our human cognitive abilities. In particular, we interpret, modify and adjust our meaning of *Design* in keeping with our different experiences. According to Blumer (1969), this third premise sets *Symbolic Interactionism* apart from other theoretical positions. Fine & Tavory (2019) extend Blumer's third premise to include the linking of human situations. As we recognise the patterns and structures surrounding these situations, we would, accordingly, adjust our meaning of *Design*.

7.2 Discussion

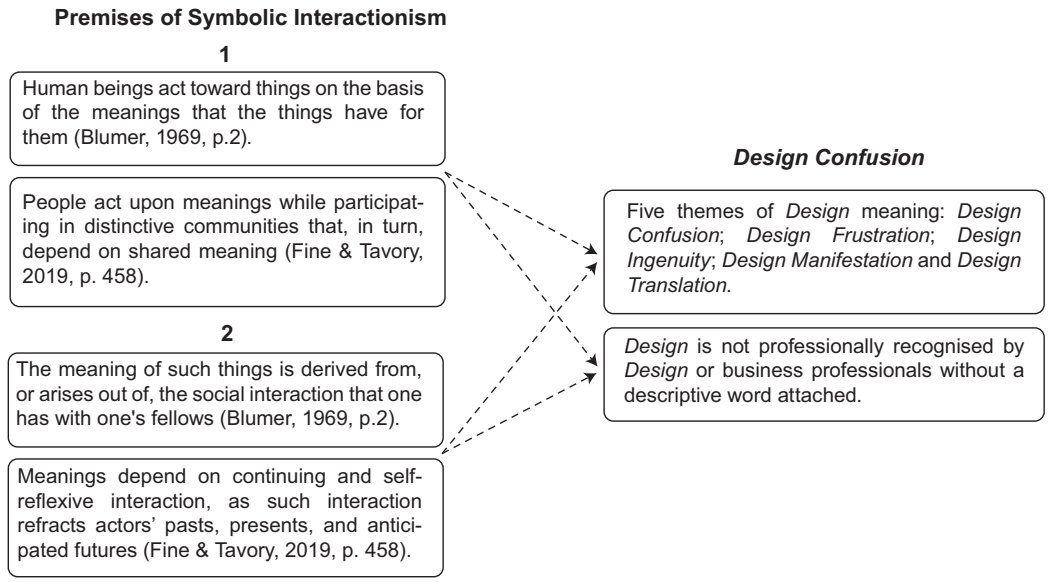
In this discussion section, each of the *Design* meaning themes and their relation to the synthesised results, as displayed in Figure 38, appear separately. Section 7.2.1 discusses the theme *Design Confusion* and its relationship to the three studies. Section 7.2.2 discusses *Design Frustration*, 7.2.3 *Design Ingenuity,* 7.2.4 *Design Manifestation* and 7.2.5 the final theme, *Design Translation.* Section 7.2.6 provides a discussion on the *Design* and business vocabulary that emerged from a convergence of the three studies. Section 7.3 considers the *Limitations* of the studies and 7.4 *Future Directions*.

7.2.1 *Design Confusion: Speaking, Writing and Recruiting Design*

Design Confusion is the meaning of *Design* or *Design-related* concepts that seem confusing or vague for people. Figure 39 is a detailed view of the premises of *Symbolic Interactionism* and their relationship to *Design Confusion*.

Figure 39

Symbolic Interactionism and Design Confusion



The results found that a person's actions towards *Design* were not a representation of their feelings.

One participant, a professional in Engineering, provided a demonstration of this when she acknowledged the importance of *Design* yet, distanced herself from being called a designer. She said,

> "Yes. I am involved in the *Design* process, not currently doing *Design*. I am not the designer. [I have] a project management role, we'll package that up to go to the delivery group which will include detailed *Design* and construction."

She said, for her, the meaning of *Design* was "confusion …if someone says the word *Design*, it doesn't evoke any strong feelings one way or another".

This participant's response is in keeping with Leonard and Straus (1997). They claim engineers view themselves as "analytical, mathematical and logical" (p.115). From the *Symbolic Interactionist* perspective, the participant's 'confusion' about *Design* could relate to "participating in distinctive communities that, in turn, depend on shared meaning" (Fine & Tavory, 2019, p. 458).

Thus, the participant was acting towards *Design* on the meaning it had for her while, at the same time, acknowledging that *Design* was a crucial part of the engineering discipline (Blumer, 1969).

The results also found that people include the word *Design* in general language without connecting it to the professional discipline of *Design*. For example, another participant, who worked in finance, seemed to be dissociated from the word *Design*. He said, "[talk] about *Design*? [For me] it's an automatic switch-off with no immediate relevance".

Nevertheless, later in the interview, he claimed, "At work, I enjoy designing information packages". The participant was acting towards *Design* based on the meaning it had for him. In the second *Symbolic Interactionist* premise, Fine and Tavory (2019) contend that meanings depend on "the 'actors' pasts, presents, and anticipated futures" (p.458). It seems this interview participant had a predetermined attitude towards *Design*.

Likewise, a third participant, who was a craft blogger, struggled to define *Design* and said,

> "I don't even think about *Design*, [its] nothing I have ever thought about. People like me; you notice things when they are bad. I'd recognise that more so than good *Design*".

These responses indicate that, in business, people have feelings towards *Design* that can be separate from their intellectual definitions of it. The meanings they give to *Design* and their thoughts may not be connected. The findings also imply that people can have more than one definition of *Design*, even multiple definitions. Furthermore, a person may use the word *Design* in general communication and not connect it to *Design.*

The results show the word *Design* is regularly attached to a descriptive word - for example, *Web Design*. These descriptive words seem to be prevalent in *Design* communication. Quite possibly because of public 'confusion' associated with the term.

Over the 18 years of Study Two, the keyword *Design*, without a descriptive word attached, appeared just once in DS (the journal *Design Studies*). Although, *Design* as a singular word, appeared six times in HBR (*Harvard Business Review*) for the same period. *Design* as a singular keyword did not appear in AMJ (*Academy Management Journal*).

These low occurrences of *Design* as a singular keyword infer that the authors did not view *Design* as a profession. It was an unexpected finding in the journal of DS. As DS represents the *Design* professions, there was an 'assumption' that *Design* as a singular identity would have more recognition. However, the results show, there was slightly more adoption in business but none in management.

The descriptive words for *Design*, across all three journals, included *Design activity*, *Design process*, *Product Design* and *Conceptual Design*. The diverse range of descriptive words attached to *Design* indicates, in keeping with the views of many academics, that *Design* is not considered a profession in its own right (Lawson, 2006; Nelson & Stolterman, 2012).

Even the five *Design* meaning themes: *Design Confusion*, *Design Frustration*, *Design Ingenuity*, *Design Manifestation* and *Design Translation,* central to this discussion, use descriptive words to define their value. Descriptive words support the premise that there is a lack of acceptance of *Design* as a profession.

Moreover, there was a significant disparity in the use and number of *Design* keywords for each journal. AMJ had 10,583 keywords for the 18 years; DS had 2,456 and HBR had 18,127. However, AMJ had only 16 (0.1%) occurrences of *Design* keywords, DS had 1,419 (58%) and HBR had 66 (0.4%).

In a list of the top 22 keywords for each journal, AMJ and HBR shared 13 keywords, but neither had keyword categories in common with DS. Furthermore, there was a disproportionate gap in occurrences of *Design* in the article titles.

The term *Design* appeared in less than 1% of AMJ and HBR titles, while for DS, the number was nearly 80%. There was more evidence of *Design* in the abstracts, although the numbers were still inconsistent.

All three journals showed higher instances of *Design* in the abstracts suggesting that the titles specifically focused on *Design* and the abstracts used *Design* more generally.

Similarly, the large number of jobs listed under *Design* did not reflect the same number with *Design or* designer in job titles.

Fifteen thousand jobs ads for *Design* in 2013 and 19,000 job opportunities in 2019 are significant numbers for any discipline. However, the *seek.com.au* website restricted display to a maximum number of 200 pages with between 22 and 20 jobs ads per page. Thus, the total number of viewable job listings for *Design*, at any one time, was between 4000 and 4400 for both years (Jervis & Brand, 2014). Either way, these large numbers gave the impression that *Design* was a significant and growing area of employment.

In 2019, *Design* or designer appeared in 24% of job titles yet, the body of the job ads had a higher presence of *Design* (75% in 2019). It seems businesses use the word *Design*, overall, more frequently in the body of the ad, suggesting it is just general language.

The contrasting numbers between the use of *Design* in the titles and the body text suggest that the titles are a more accurate reflection of actual *Design* jobs.

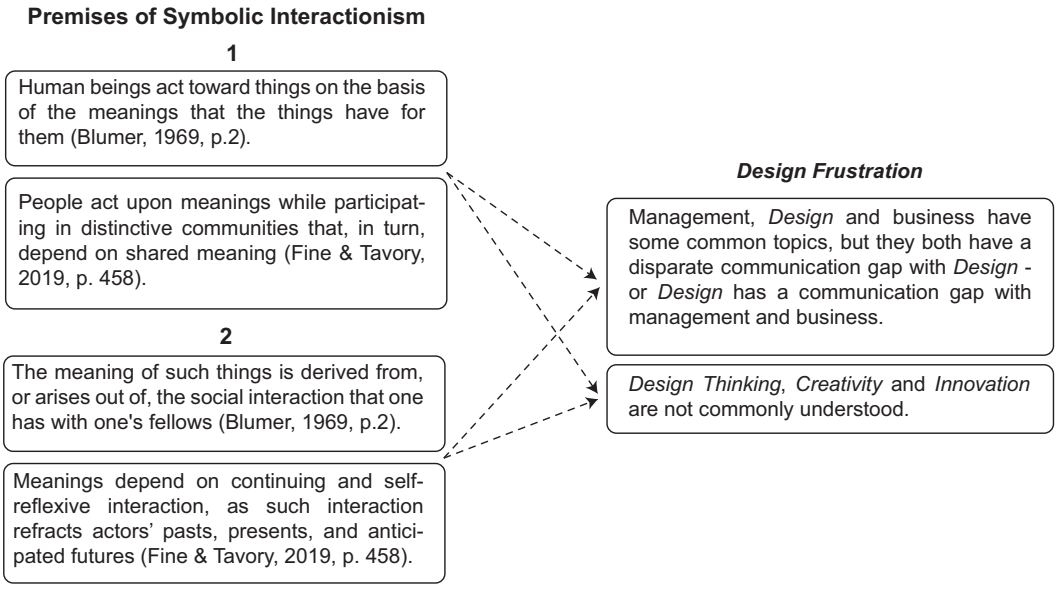
It is evident from the results that 'confusion' about the professional meaning of *Design* is related to the disconnected meanings professionals in *Design* and business give to *Design*.

7.2.2 *Design Frustration: Speaking, Writing and Recruiting Design*

Design Frustration is feeling a sense of frustration that *Design* or *Design-related* concepts are not acknowledged. Figure 40 is a detailed view of *Design Frustration* and its aligned SI premises.

Figure 40

SI Principles and Design Frustration



The data from Study One revealed a sense of frustration amoung the *Design* professionals because they regularly witnessed a lack of acknowledgment for *Design* in business. One professional in *Design* said,

> "*Design* is a very vague and saturated word. Technically everything is designed in some way or form. *Design* used to hold a lot of respect, now [its] a bit of a throw around term".

Another *Design* professional stated that,

> "The best *Design* is invisible. That's what frustrates me [people] still think *Design* is abstract - woo woo - with art and colours. "I am not a designer," it is like I am not an artist".

The results show a significant disparity between management and business and their connection to *Design*. In general, AMJ (management) and HBR (business) shared six themes from their top 20 list of word combinations: *business enterprise*, *industrial management*, *management research*, *organization effectiveness*, *personnel management*, and *strategic plan*.

However, perhaps the shared topics between AMJ and HBR did not extend to DS because professional *Design* did not engage with management and business interests. Nevertheless, the 'partnership' of *Design* and business received limited recognition in any of the professional publications studied. These findings support the first premise of *Symbolic Interactionism* in which Fine and Tavory (2019) argue that "People act upon meanings while participating in distinctive communities that, in turn, depend on shared meaning" (p.458).

The results also provided insights into the understanding and use of *Design Thinking*. The analysis found that most of the participants in Study One were either unsure of or had never heard of *Design Thinking*.

Two participants said,

> "I have heard of it, but I don't use it. I am not sure I fully understand it."
> "No. Well, I might have, but I have forgotten if I have. *Design Thinking*? Um… no I'm sorry".

Notably, one professional working in *Design,* as part of a small boutique company, said there was no expectation of *Design Thinking*,

> "unless you are in a very certain type of workplace or like a certain environment, but it's something I feel is going to become more common".

Another participant, who consulted with principal organisations listed on the stock exchange, said

> "I do use it. Partly because of just the corporate world and that's a term that people love. *Design Thinking* makes it sound like it's the new 'innovation' in my mind".

These observations suggest that, while some large organisations, such as KPMG and IBM, have adopted *Design Thinking* (Muratovski, 2015), the familiarity does not extend to some smaller businesses.

In professional *Design*, DS published the keyword *Design Thinking* only nine times in 18 years compared to 77 instances of *Design Cognition*. Furthermore, the top keyword for DS was *Design Cognition*, followed closely by *Design Process*, *Conceptual Design* and *Design Education* (equal second).

Furthermore, *Design Thinking* had a limited presence in HBR and no appearances in AMJ. However, in 2015, the editors of AMJ endorsed *Design Thinking* as an important topic for management scholars (Gruber, de Leon, George & Thompson, 2015). However, subsequent AMJ articles in this study did not reflect any response to their request.

In HBR, Brown (2008) introduced *Design Thinking* to business. Brown's article is well known and regularly cited. However, an unexpected finding was that, however well-received, this review of *Design Thinking* did not increase the number of subsequent articles about the topic.

It seems that *Design Cognition* or cognitive strategy may have been author substitutes for *Design Thinking*. If so, the implications are that academics were not responding positively to the concept of *Design Thinking*.

Similarly, Verweij (2017) cites Anthony Sully, a British interior designer and writer. Sully recently posted an aggressive attack against *Design Thinking* on LinkedIn.

Verweij (2017) states that Sully's post received more than,

> 1,200 comments about a subject that is seen by many as zeitgeisty but meaningless, but by others as a revolutionary approach to problem solving (Verweij, 2017, para. 4).

Design Thinking, it seems, is either loved or loathed.

Design Thinking in the body of an article but not appearing in the title, abstracts or keywords, infers *Design Thinking* was not a central topic for the authors.

Likewise, Study Three found that there was only one job ad (0.25%), for *Design Thinking* in 2013, and that was for a government department. The number grew to six (2%) in 2019, one of which also appeared under the classification of *Government & Defence*.

The appearance of *Human-centred Design* in 2019 after zero occurrences in 2013 did show that some businesses (three) were aware of its presence. The findings for *Human-centred Design* were included in the analysis because it is the foundation of the *Design Thinking* process (Brown, 2008).

The limited, but still notable emergence of *Human-centred Design* and *Design Thinking* in *Government and Defence* job classifications suggests the topic is gaining some traction in large organisations (Terrey, 2012).

The findings also revealed that, while a person might have a meaning for *Design*, it did not mean they relate to or understand *Design Thinking*, creativity or innovation.

The results indicate that professionals in both *Design* and business would benefit from more understanding of each other. Shared understanding could go some way to eliminating frustration caused by misunderstandings in *Design* and business communication.

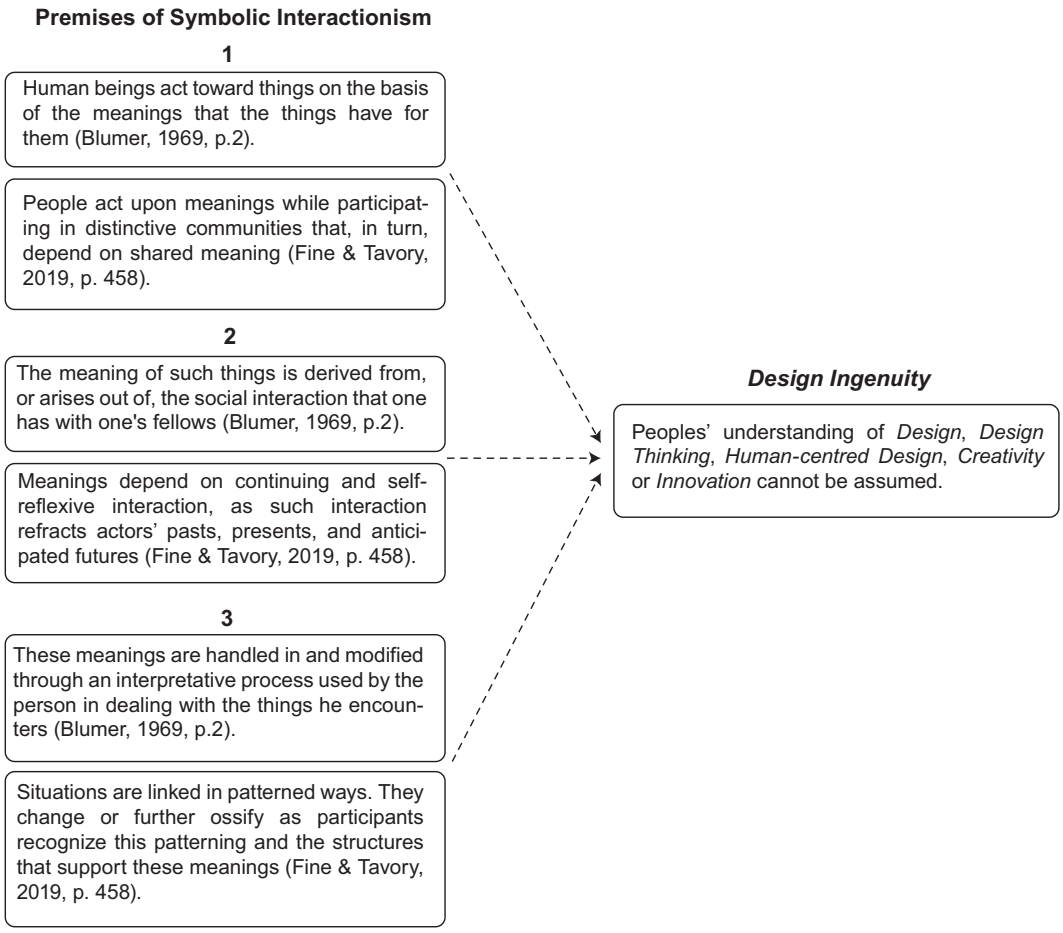
7.2.3 *Design Ingenuity: Speaking, Writing and Recruiting Design*

Design Ingenuity represents the unlimited possibilities and creative ability of the human imagination.

Figure 41 provides a sectional view of *Design Ingenuity* and its aligned SI premises. In this instance, *Design Ingenuity* relates to all three premises of *Symbolic Interactionism* by Blumer (1969) and Fine and Tavory (2019).

Figure 41

SI Principles and Design Ingenuity



As one participant said *Design* was,

> "a 'process of creation'… the manipulation of elements relating to whatever industry the designs in to create something".

Another participant found that allowing herself to *Design* became a life-changing experience,

> "[I] thought *Design* was for designers; you had to be qualified; fashion or an architect [an] elitist type of label. [When] I found that I could use my own *Design* skills; I really stretched myself and it changed my life".

Creation and the process of changing one's opinions about something, such as *Design*, is particularly relevant to the third *Symbolic Interactionist* premise. Blumer (1969) maintained that human beings adapt meanings through "an interpretative process…dealing with the things [we] encounter" (p.2). Fine and Tavory (2019) claim that meanings change or solidify as people recognise different "patterning" or "structures" (p.458).

Furthermore, *Design* is often associated with the typical characteristics of other words, such as creativity and innovation.

The report, *Cox Review of Creativity in business: building on the UK's strengths*, referred to *Design* as the link between creativity and innovation (HM Treasury, Cox Review, 2005); however, creativity is also, "an important aspect of the *Design* process and *Design Thinking* is creativity" (Hokanson & Kenny, 2020, p. 3). Nevertheless, most of the participants seemed more comfortable defining creativity than any of the other terms.

Only one participant suggested that creativity was part of *Design*. The majority of Study One participants saw creativity as human imagination or the human ability to think about new ideas (Amabile & Khaire, 2008). It seems, from the participant responses, that the concept of creativity was more straightforward to define than *Design*.

Creativity had a slightly more robust presence in DS (3%) than in AMJ (1%) or HBR (1%). DS authors did not include any descriptive words with creativity. In contrast, for AMJ and HBR, all keyword instances of creativity included descriptive words, such as *Creative Thinking*.

Amabile and Khaire (2008) argue that managing creativity in the workplace has become a necessary focus for many executives. However, the result of 15 unique keywords for creativity across the three journals indicates a spread of topics relating to creativity but no depth in one specific area.

Similarly, in Study Three, none of the job ads and, therefore, by reflection, businesses focused on creativity in either 2013 or 2019. Creativity appeared in 8% of the job ads for 2013 and dropped to 6% in 2019. Creativity in job titles also dropped from 2% in 2013 to 0.3% in 2019. There was no change in the job classifications for creativity; they stayed the same for 2013 and 2019.

However, Harvard Business School professor Pisano (2019) believes that organisations face a balancing act and support creativity within innovation practices. Pisano (2019) argues that:

> A culture conducive to innovation is not only good for a company's bottom line. It also is something that both leaders and employees' value in their organizations (p.65).

In contrast to the views of Pisano (2019), the participants who were working in professional *Design* argued that innovation was a corporate 'buzzword'. It had become a substitute for *Design* because it sounded more commercially appealing.

One participant said,

> [Innovation] "is a buzzword; I am biased because one of my roles is in an 'innovation hub'. [I am] immune to the whole innovation world; business worlds are constructed around that word and how they are perceived and projected onto the community".

Another participant stated,

> "Innovation feels just like a corporate buzzword to me. It's an act of doing; I am 'doing' creativity".

Wrigley (2017), in her work with *Design-Led* innovation, has witnessed the issues arising within projects when people are too "caught up in the 'buzz word' of *Design*" (p.245). Similarly, *TrustRadius*, an online data review site for business, surveyed 764 business professionals to identify 'hated' buzzwords. In their article, *The Ultimate List of 119 Most Hated Business Buzzwords,* the word *Innovative* was number 52. *Design*, *Design Thinking* and creativity were not on the list (Tomac, 2019).

However, at the same time, some participants had no meaning for innovation, while the professionals in engineering and marketing described innovation as a procedural strategy. Another interview participant said innovation was "thinking outside the box".

Similarly, innovation appeared overall in 1% of the keywords for all three journals. In DS, the keyword was used singularly as innovation. In AMJ and HBR, innovation had descriptive words attached, such as *Innovation Management* or *Technological Innovations*.

The result was 33 individual keyword categories for innovation across AMJ, DS and HBR. Thus, innovation doubled the keyword presence of creativity in AMJ and HBR; however, in DS, innovation was less than creativity.

Overall, innovation grew to 7% in 2019 job ads, and creativity dropped 1%. However, innovation did not appear in the job titles, only the body of the ad.

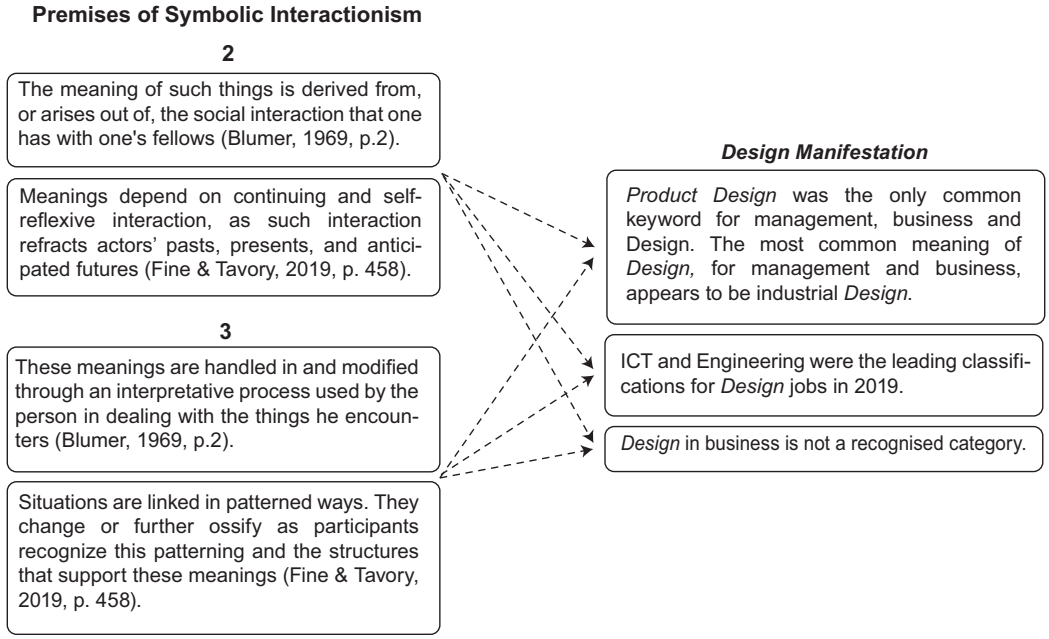
Pisano (2019) states that innovation is a suitable tool for enabling an organisation's financial growth, yet all three premises of *Symbolic Interactionism* apply to these findings. For example, the meanings of *Design*, creativity and innovation varied as different individuals allocated them meanings. The peoples' assigned meanings arose from their interactions with other people, from within distinct societies. Their interpretations diverge depending on the scope of recognition people gave to the term (Blumer, 1969; Fine & Tavory, 2019).

7.2.4 *Design Manifestation: Speaking, Writing and Recruiting Design*

Design Manifestation is an outcome or realisation of something, real or imagined; a manifestation expressed. Figure 41 is a sectional view of *Design Manifestation* with its aligned *Symbolic Interactionist* premises.

Figure 42

SI Principles and Design Manifestation



The results show that the only connection between AMJ, DS and HBR publications was the keyword, *Product Design*. The definition of *Product Design* is "the transformation of a market opportunity and a set of assumptions about product technology into a product available for sale" (Krishnan & Ulrich, 2001).

Thus, *Product Design* is, fundamentally, the manifestation of an idea. As one participant described *Design*, "somebody with creative sight [who] can put forward their vision and manifest what's in their mind".

In the economy, the terms *Product Design* and *Industrial Design* are contextually similar. In particular, industrial *Design* is considered an economic driver (Margolin & Margolin, 2002; Smith, 2005). It does seem for business *Design* is an industrialised field. However, Wrigley (2017) found problems arose in innovation projects if businesses assume *Design* is only a "product manufacturing offering" (p.246).

The second *Design* keyword for AMJ was *Experimental Design*, also shared with HBR but not in DS. The third keyword found in AMJ and shared with HBR was *Work Design*, again not found in DS.

These findings mainly speak to the first and second premises of *Symbolic Interactionism*. For example, professionals in business and *Design* were acting on their meanings of *Design* "while participating in distinctive communities" (Fine & Tavory, 2019, p.458) and their "social interaction ...with one's fellows" (Blumer, 1969, p.2). In other words, for business and *Design*, their professional boundaries defined their meaning of *Design*.

The online job portal, *seek.com.au*, listed 19,000 *Design* job opportunities in 2019, an increase of 6,000 jobs since 2013. However, as noted in Chapter 6, the nature of the medium meant the actual number of accessible employment opportunities was approximately 4,000.

Each job listing used one of 30 predetermined job classifications. Only one, the category of *Design & Architecture*, included the word *Design*.

The classification *Design & Architecture* had 14% of the job listings in 2013 and just 10% in 2019. The main classification for *Design* jobs in 2019 was *Information & Communication Technology*; then *Engineering* and third, *Design & Architecture*. Some 2% of the jobs under *Design* in 2019 made no mention of *Design*.

Two reports, *Deloitte Access Economics* and the *Australian Computer Society* report, stated that "demand for technology workers will grow by 100,000 between 2018 and 2024" (Australia's Digital Pulse, 2019, p.2). Nevertheless, although the number of *Design* jobs under the classification *Information & Communication Technology* (ICT) increased by two in Sydney between 2013 and 2019 the number decreased by 11 in 2019 in Melbourne.

In 2019, most *Design* job listings came from Sydney, with 35 more listings than Melbourne. In 2013, the *Design* job gap between Sydney and Melbourne was only six listings.

The first *Design* job classification preference was still *Information & Communication Technology* in Sydney, but *Design & Architecture* came second and *Engineering*, third. These results suggest growth in the *Design* professions for Sydney.

Overall, the leading sub-classification for all *Design* jobs in 2013 and 2019 was *Civil/Structural Engineering*.

Design subclassifications were *Fashion & Textile Design*, *Graphic Design*, *Industrial Design*, *Interior Design*, *Urban*, *Design & Planning* and *Web & Interaction Design*.

There was no job sub-classification for *Design* in its own right.

Architecture, however, had *Architect*, *Architectural Drafting* and *Architecture*.

Engineering, in a similar way to the sub-classifications for *Design*, had multiple categories: *Building Services Engineer*/*Engineering*, *Civil*/*Structural Engineering*, *Electrical*/*Electronic Engin*eering, *Engineering–Network*, *Engineering–Software*, *Engineering Drafting*, *Field Engineering*, *Mechanical Engineering*, *Mining-Engineering & Maintenance*, *Project Engineering* and *Systems Engineering*.

The lack of a job classification or sub-classification for *Design*, without a descriptive word attached, implies a lack of recognition for *Design* as a profession (Nelson & Stolterman, 2012).

Overall, there were no significant changes to the results over the study timeframe.

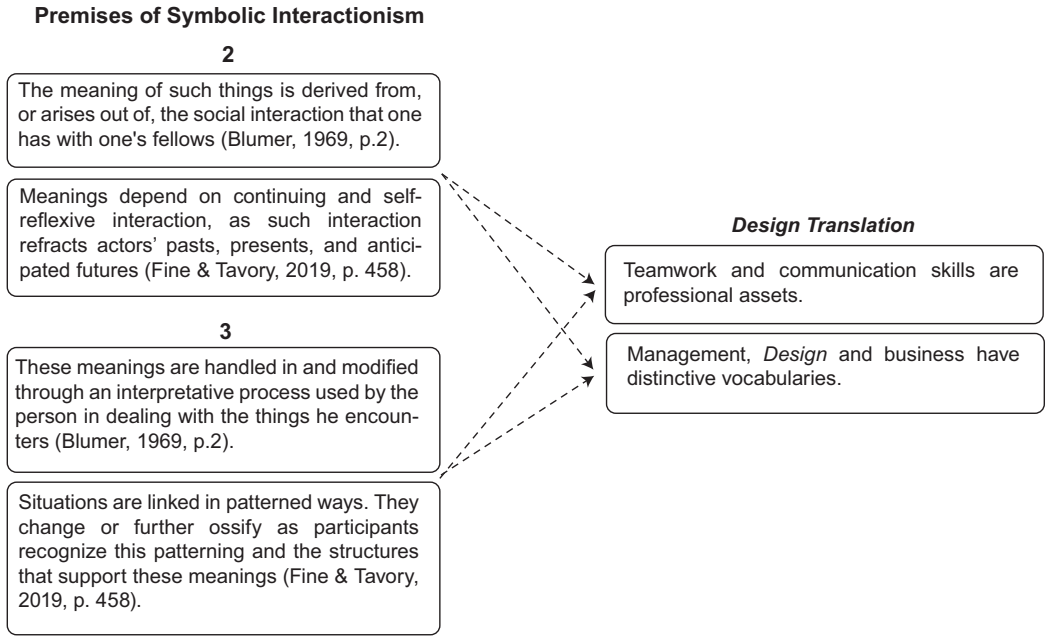
Furthermore, neither the opinions of professionals in *Design* and business, an analysis of the publications AMJ, DS and HBR or the job ads on the website *seek.com.au* demonstrated any evidence of modified thinking outside "the structures that support these meanings" (Fine & Tavory, 2019, p.458). In other words, the meaning of *Design* was dependent on who was speaking.

7.2.5 *Design Translation: Speaking, Writing and Recruiting Design*

Design Translation is ideas, views or things, translated and interpreted to enable shared understanding. Figure 43 provides a section showing *Design Translation* and its alignment with the premises of *Symbolic Interactionism*.

Figure 43

SI Principles and Design Translation



In Study One, a participant best summed up *Design Translation* with the words,

> "To me, [*Design*] it's 'translation'. You want people to think or understand or do [then] you need to translate that into a language that they understand so that they are empowered to do it. You are a designer because you are helping me understand the information".

Design Translation is not a new association for *Design*. In a study that examined how professional designers experienced *Design,* Daly (2008), who has a background in engineering, defined *Design Translation* as:

> *Design* is organized translation from an idea to a plan, product, or process that works in a given situation (Daly, 2008, p.80).

Daly's (2008) definition of *Design Translation* aligns with the business and industrialised perceptions of *Design* found in this research. For instance, the journals AMJ, DS and HBR show many *Design* fields relate to industrial *Design* through keywords such as *Engineering Design*, *Product Design*, *Architectural Design*, *Design Research*, *Industrial Design*, *Design Technology* and *Web Design*.

Nonetheless, AMJ, HBR and DS all demonstrated their distinctive social groups through their most common word combinations. AMJ has a social culture or distinctive community of management and organizational scholars attracted to empirical research published in the journal. Thus, the paramount word combination for AMJ was *Organisational behaviour*.

The DS community is related to a wide range of professional *Design* fields and research. Its most used word combination was *Design Process*.

The HBR journal has an audience of professional people connected through general business topics from a respected source. The most frequent word combination for HBR was *Strategic Plan*.

It is standard procedure for academic authors to choose a journal in which the aims and scope of the publication align with their written intentions. So, it is not unexpected that the word combinations of *Organizational behaviour*, *Design process* and *Strategic plan*, indicate that all three publications were part of "distinctive communities" (Fine and Tavory 2019, p.458).

However, management*, Design*, and business professionals appear to use different vocabularies, which despite journal assertions of inter-disciplinary associations, causes some group isolation (Fine and Tavory 2019).

Sharing vocabulary is, therefore, a critical communication tool during collaborations and teamwork in business. Overall, the participants felt that better results were achievable with a team of people.

One interview participant worked with large organisations to help teams manage their problem-solving processes. His experiences revealed that:

> "if the CEOs an engineer and developed a whole company culture around one particular specialty, generally, you find the culture does not support the others… *Design* is the enemy. '*Design,* oh, these designers they are always making things pretty and complicated and we have to build it'. I will tell you a sentence that changes everything: "*we are all designing. I solve my problems with pixels; you solve your problems with code, they solve problems with words; we're all designers".*

Similarly, Wrigley (2017) during extensive research involving seven case studies of *Design-Led* innovation projects in business noted:

> A majority of the executive level roles were engineers, including the Managing Director of which the term 'design' was felt to host different connotations (Wrigley, 2017, p.245).

Folkestad and Gonzalez (2010) found that teams are essential for business innovation; they argue that innovation is no longer part of the "lone inventor" myth, it is "as much a social process as it is technical" (p.118). Managing and working in teams was an essential requirement for nearly half the job listings for 2013 and 2019. In particular, there was a slight 2% increase in specific requests for *Design Teams* in 2019.

Furthermore, the interview participants recognised that shared communication was essential to successful team outcomes (Conklin, 2005; Martin, 2007). A finding supported by the significant number of businesses (53%) that requested communication skills, along with written and verbal skill requirements.

As a part of speech, *Design* appeared predominantly as a noun and usually as a job position or role, for instance: *Residential Designer - Are you a Draftsperson looking to get into Design?* In this example, *Design* and designer are both nouns.

However, *Design* also appeared in the body of the job ads as a verb. Under the context of employee responsibilities such as "you will work on all phases of the *Design* development to meet seasonal timelines". *Design* in this instance is a verb.

Over time, the results show that employer requests for *Design* responsibilities grew across all job classifications from 26% in 2013 to 31% in 2019, indicating that *Design* was growing in presence as a verb.

These findings show that *Design Translation* is relative to the vocabulary professionals use in management, *Design* and business. Thus, it is critical to a shared understanding of *Design* (Boland & Collopy, 2004).

The social communities of AMJ, DS and HBR, along with the job culture of *seek.com.au*, have not significantly changed their views of *Design* between 2000 and 2019.

There were indications that *Design Thinking*, *Human-centered Design* and innovation were on the increase. The instances of creativity for the timeframe seemed stationary.

Further research would reveal if, as the third *Symbolic Interactionist* premise states, there is a pattern emerging with the meaning of these terms (Fine and Tavory, 2019). Blumer (1969) refers to this as "interlinkage of action" (p.16), which infers the meaning of *Design Thinking*, *Human-centered Design and* creativity changed with new interpretations from social interactions.

The words '*Design* and business' were not a priority in any of the journals. They appeared in only one title for DS, two for HBR and none for AMJ. The following section looks at a convergence of the shared vocabulary emerging from Study Two.

7.2.6 *Converging Management, Design and Business Vocabulary*

The common denominator between peoples' varying *Design attitudes* is their vocabulary. The lack of shared understanding between *Design* and business was evident in the findings. Following on from Boland and Collopy's (2004), *Toward a Design Vocabulary for Management* (pp. 267-276), the initial top 20-word combinations for each publication created a foundation for a management, *Design* and business vocabulary.

As DS had no shared word combinations with AMJ or HBR, the vocabulary for *Design* consists of the complete 20-word list from DS. AMJ and HBR had six shared word combinations, so there are 34 words representing management and business. This word list represents the most commonly used words from anywhere in the publications. See Table 54.

Table 54

Management, Design and Business Vocabulary

Design Vocabulary	Management and Business Vocabulary	Management and Business Vocabulary Continued
Architectural *Design*	Ability management	Management science
Collaborative *Design*	Business enterprise	Market strategy
Conceptual *Design*	Business model	Organisational behaviour
Design	Business plan	Organisational change
Design activity	Chief executive	Organisational effectiveness

Design Vocabulary	Management and Business Vocabulary	Management and Business Vocabulary Continued
Design cognition	Chief executive officer	Organisational sociology
Design education	Competitive advantage	Organisational structure
Design knowledge	Corporate culture	Personnel management
Design method	Economic aspect	Research organisational
Design practice	Employee attitude	Social aspect
Design problem	Executive ability	Social network
Design process	Executive ability management	Strategic plan
Design research	Executive officer	Supply chain
Design team	Firm performance	Work environment
Design theory	Human capital	
Design Thinking	Industrial management	
Design tool	Job performance	
Engineering *Design*	Job satisfaction	
Problem Solving	Long term	
Product *Design*	Management research	

The following section discusses limitations connected with this mixed method research.

7.3 Limitations

All studies have limitations that require consideration (Daly, 2008). This research used a mixed method *Design* consisting of one qualitative study, one quantitative study and one study with a mix of quantitative and qualitative data.

The three studies and mixed methods support the triangulation of the data in Study Two, particularly comparing the three professional publications AMJ, DS and HBR. The purpose of triangulation is to view the data from different viewpoints.

Neuman (2006) reasons that by "measuring something in more than one way, researchers are more likely to see all aspects of it" (p.149).

Likewise, mixed methods in themselves are a "form of triangulation in research seen as mitigating the weaknesses found in single methods" (Noble and Heale, 2019, p.67).

In this thesis, the research *Design* enabled triangulation and viewing of the data from different aspects (Creswell, 2014; Neuman, 2006). However, the diversity of the studies turned out to be a limitation. Many examples of mixed methods in the literature concentrate on mixing data from a large, single study. In this case, three diverse studies and three contrasting journals made it more challenging to achieve triangulation in "a consistent manner" (Noble & Heale, 2019, p.68).

The three premises of *Symbolic Interactionism* formed a structured focus for a) the research questions used in Study One and b) the variables analysed in Study Two and Study Three. The three premises supplied by Blumer (1969) were more limiting during analysis than the updated principles by Fine and Tavory (2019). This research benefited from including Fine and Tavory's (2019) extended *Symbolic Interactionist* premises with Blumer's. However, interactionism can limit research on the thoughts and actions of people (Gray, 2013). Therefore, other theoretical perspectives, such as grounded theory or Actor-Network Theory, could be considerations.

Another limitation was access to participants for Study One. The financial constraints of a single researcher and her physical access to people who qualified for the study did limit the study.

The qualitative nature of Study One and the relatively small number of people interviewed means that the results cannot represent a population (Fusch & Ness, 2015; Mason, 2010; Daly, 2008).

However, detailed documentation can contribute to the reliability of the findings (Daly, 2008). To this end, the interview transcriptions and In-Vivo coding helped ensure the data consisted of only the participants' exact words (Terrey, 2012). As the literature supported these results, they could still be considered valid (Barnett, 2005).

Study Two was limited to quantitative analysis of the titles, abstracts and keywords of three publications. The sample was a census of data across an eighteen-year timeframe and, as such, was considered a representative sample. Larger sample sizes reduce the risk of sampling errors (Coughlan, Cronin & Ryan, 2007).

Furthermore, the researcher managed the large sample, so in the absence of multiple coders and to ensure the reliability of results, 'inter-rater' checks were conducted.

The researcher engaged in regular data checking and data comparisons. As the researcher kept in-depth documentation, the inter-rater checks could be traced to the start if necessary. The analysis also focused on 'explicitly stated' words in the publication titles, abstracts and keywords to ensure the results remained as accurate as possible (Terrey, 2012).

However, Study Two findings could be impacted by including qualitative analysis of the whole articles and recommended inter-coder reliability testing (Creswell, 2014). For example, a more in-depth examination of *Design Thinking* in the body of the articles rather than limiting the content analysis to titles, abstracts and keywords.

Additionally, the study may benefit from including more expansive ranges of publications or additional domains.

The third study used a systematic random sample from a dynamic website. The same sampling process for the third study was replicated after six years to confirm the rigour of the process and compare results. Outcomes could change by implementing different periods or using a less limiting sample.

Study Three also focused on a single job website, *seek.com.au*, which limited job listings to Australia. An expanded study could include a more global perspective for employment, which would make it more comparable to the global nature of Study Two. Moreover, the third study's focus was limited to *Design* and its explicit wording in the titles and body of the job ads. Additional in-depth qualitative analysis of the complete job ad could provide deeper insights.

The researcher has education and experience in *Design* and was acutely aware of managing possible bias. The implementation of three studies and mixed methodology with detailed reporting helped address this issue (Daly, 2008).

Furthermore, all three studies required a substantial degree of 'explicitly stated' information, which also helped reduce possible bias. It allowed the researcher to mentally 'step back' from the findings and focus on the results. Rigorous attention to detail and coding helped maintain transparency (See Chapter 4, Chapter 5 and Chapter 6). Nevertheless, efforts can still be valid despite limitations (Bavdekar, 2015).

7.4 Future Directions

Several areas would be desirable for future work. *Symbolic Interactionism* as a theoretical foundation for *Design* could prove beneficial for bridging the communication gap between the *Design* professions and *Design* research. Further research could establish whether *Symbolic Interactionism* could become a foundational and general theory for professional *Design*.

Future interviews could include a broader range of questions. For example, questions that ask the participants for specific examples or stories of their involvement in a *Design* project, product or service. Additional phenomenologically inspired questions would extend the findings of *Design* meaning. These stories of *Design* involvement could effectively show *Design* meaning in action from a *Symbolic Interactionist* perspective (Blumer, 1969).

The revitalised *Symbolic Interactionist* premises by Fine and Tavory (2019) offer widening opportunities for mixed method applications and broader implementation of quantitative data collection methods relating to *Design*. Future studies could aim to replicate the results of Study One with a larger sample. Applying the five themes in the workplace would develop and confirm how best to manage the polysemy of *Design*. It seems, from the findings, that an important area for exploration is the difference between a person's definition of *Design* and their thoughts about it.

Future research could develop the findings of *Design*, *Design Thinking*, creativity and innovation by a) extending the number of qualitative interviews. b) Extend the timeframes for Study Two and Study Three to compare the current findings with a post-pandemic world. Furthermore, the meaning of *Design* in innovation policies, as outlined by the *Global Innovation Index* (Dutta, Lanvin & Wunsch-Vincent, 2020), could be an essential subject for future research. It would provide a deeper understanding of the economic value of *Design*.

Finally, the researcher believes professional *Design* would benefit from more examples of structured research that combines *Design* research, *Symbolic Interactionism*, mixed methods and triangulation.

The future directions described in this section are presented in more detail in Chapter 8 Conclusion, under Recommendations (8.4).

Chapter 8: **Conclusion**

Chapter eight provides a conclusion for this research. It presents a brief overview of the thesis aims and purposes (8.1), then a diagram and summary of the research results. Section 8.2 presents the research contribution and 8. 3 outlines the *Design-Gap Assumption Model*, based on the premises of *Symbolic Interactionism*. The chapter concludes with recommendations for future research (8.4) and some last words (8.5).

8.1 Research Results Overview

> *The reliability orientation of business executives versus the validity orientation of designers creates a fundamental tension. Because the orientation of each is natural and utterly implicit, neither executives nor designers understand the nature of the schism; they only understand that the other side makes them nervous*
> (Martin, 2007, p.6).

This research aimed to shed light on why *Design* and business are not considered 'friends' (Martin, 2007). A situation that has not changed over the last thirteen plus years despite substantial evidence that *Design,* implemented within a business, delivers substantial economic advantages (Gilbert in Quito, 2016; Rae, 2013, 2015, 2016).

Design has a considerable history aligned with human survival (Friedman, 2000; Papanek, 1971; Mau, 2004). However, it has no accepted definition, nor is it academically endorsed or recognised by the public (Love, 2002; Margolin, 2009; Melvin, 1993; Ralph & Wand, 2013; Ulrich, 2011a).

Furthermore, tensions between the *Design* disciplines themselves are known to exist (Carvalho, Dong, & Maton, 2009; Daly, 2008; Michlewski, 2008). A review of the literature confirmed the benefits of a *Design* and business partnership while also providing evidence of their uneasy relationship. Fundamentally, the issue is a communication breakdown, in the workplace, between professionals in *Design* and professionals in business (Jervis & Brand, 2014).

This research shows the polysemy of *Design* contributes to the problem (Boland & Collopy, 2004; Moultrie, 2013; Rae, 2013). Design has multiple meanings in language, as noun, verb and in some instances, adjective (Julier, 2008; Ulrich, 2011b).

The purpose of this research was to shed light on communication between *Design* and business. To this end, one central research question and three sub-research questions were the drivers behind a mixed method convergent parallel study, founded on the theoretical principles of *Symbolic Interactionism*.

The *Design* themes relate to Study One and the *Design* and business vocabulary, Study Two. All results from Study One, Study Two and Study Three converge into Ten Key findings.

The following sections summarise the findings for each sub-research question and, finally, the central research question. The results from the previous Chapter 7 *Synthesis and Discussion* appear in three illustrated graphics on the following pages.

Figure 44

Illustrated Summary of Study One Design Themes

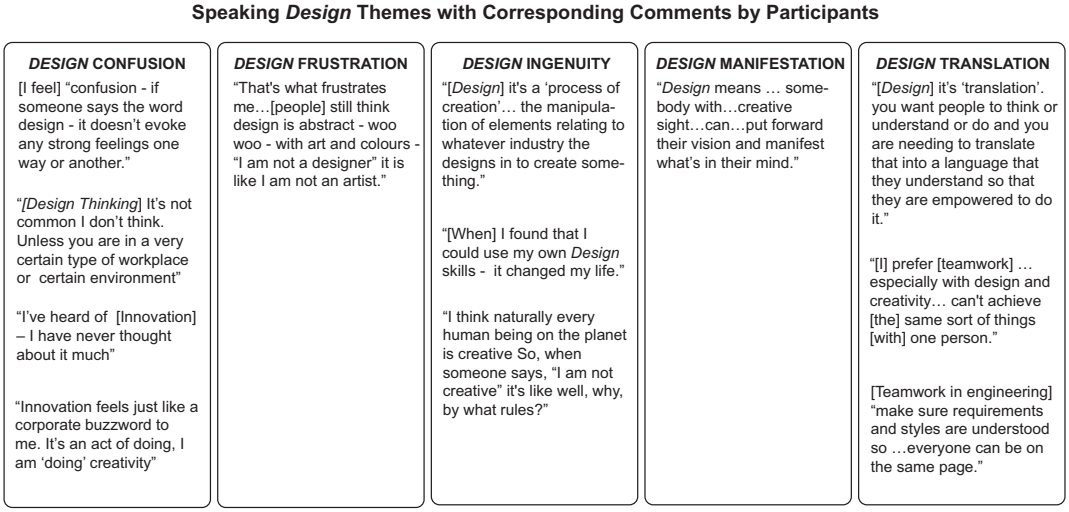


Figure 44 showcases each of the *Design* themes emerging from Study One and specific comments from the participants that contributed to each theme.

Figure 45

Illustrated Summary of Study Two Vocabulary

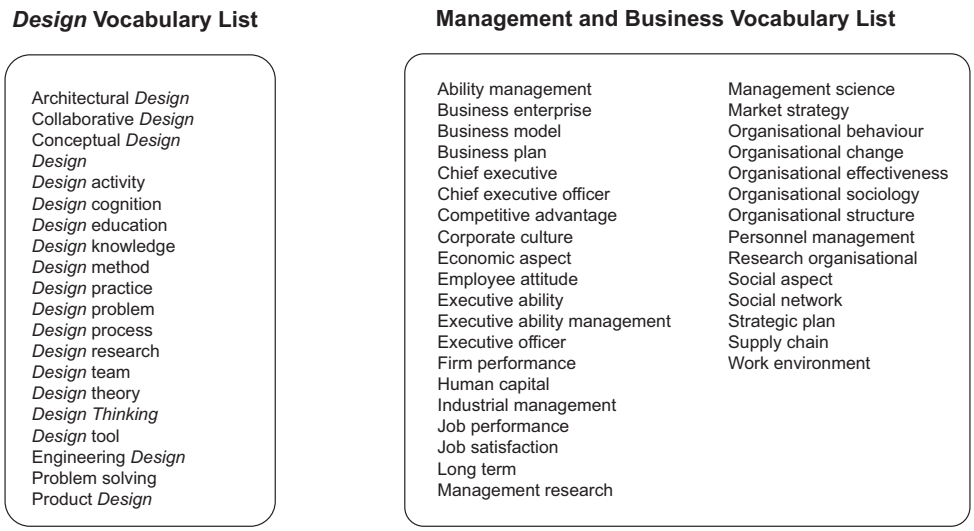


Figure 45 lists the *Design* Vocabulary next to the Management and Business vocabulary emerging from Study Two.

Figure 46

Symbolic Interactionism and Ten Key Findings

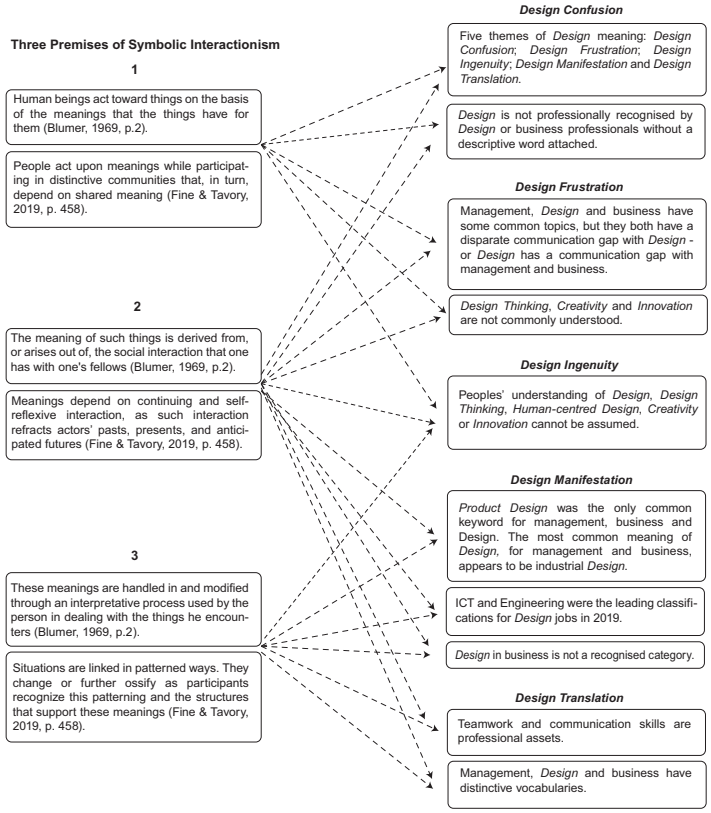


Figure 46 is a repeat of Figure 38. It showcases the premises of *Symbolic Interactionism* and links them to the *Design* meaning themes from Study One.

8.1.1 *Conclusions, Speaking Design*

The sub-research question for Study 1: *Speaking Design* was, what meaning do people give to *Design* in professional settings?

The data from Study One showed that the interview participants could have more than one meaning for *Design*. On more than one occasion, what a person said about *Design* was different from their thoughts. In other words, a person may conform to a professional view of *Design* but internally feel that *Design* was confusing. Even participants comfortable with their understanding of *Design* were confused by associated words such as *Design Thinking*, creativity or innovation.

It was clear from Study One results that one cannot make assumptions about the meaning of *Design*. Five meanings for *Design* emerged from a small group of seven interview participants. The results suggest the polysemy of *Design* is more present in professional communication than possibly anticipated.

The five themes for *Design* meaning are *Design Confusion*, *Design Frustration*, *Design Ingenuity*, *Design Manifestation* and *Design Translation*. These are summaries of how the professionals in Study One spoke about *Design*.

The results from the interviews reflect the *Symbolic Interactionist* premises:

1) The participants provide a meaning for *Design* that is relevant to them.

2) Their meaning of Design has arisen from individual interactions within communities that involve different social attitudes towards Design. None of the participants had the same meaning of *Design* and none worked in the same professional role. This second principle refers to the meaning of *Design* that one develops from past, present and potential future social interactions within groups and with one's fellow human beings (Blumer, 1969; Fine & Tavory, 2019).

3) The third principle refers to how we think about *Design*. One participant, an engineering professional, had an understanding of *Design's* position in the workplace. Mentally, however, she dismissed *Design*. It had no meaning for her. Thus, one person can have multiple meanings for *Design*. However, all seven participants acknowledged that they had not given *Design* much thought before participating in the interviews. Consequently, their knowledge of this research changed how they thought about *Design* (Blumer, 1969; Fine & Tavory, 2019).

The results for Study One are not generalisable. The small number of participants and their recruitment method, convenience sampling, means they do not represent a professional population. Nevertheless, the five *Design* meanings have made a substantial contribution to the *Design-Gap Assumption Model*.

8.1.2 *Conclusions, Writing Design.*

The sub-research question for Study Two was, how do professional publications and their authors communicate a view of *Design* through their writing?

Study Two was a content analysis of three professional publications to examine how they communicated a view of *Design* through the articles they published.

Each of the three journals selected had a distinctive group focus.

For the *Academy of Management Journal* (AMJ), the focus was on *Organisational behaviour*. *Design Studies* (DS) emphasised *Design Process* and *Harvard Business Review* (HBR) identified the *Strategic Plan*. In other words, the management group wrote about organisational behaviour. The *Design* disciplines focused on *Design* processes and for business professionals, the main topic was strategic planning.

The most noticeable pattern in the findings for Study Two was the disproportionate communication gap between *Design* and the other two journals. Management and business had common interests, such as business enterprise, management research, industrial management, personnel management, strategic planning and organisational effectiveness. However, in their top twenty-word combinations, authors of management and business did not include *Design.*

Similarly, through DS, the authors in professional *Design* did not demonstrate any noticeable connections with management and business.

The only shared connection between the three journals was the keyword, *Product Design*, a term representative of industrial *Design*. In contrast, the top keyword for DS was *Design Cognition*. However, generally, DS had more in common with HBR than AMJ. In comparison, HBR shared more article topics with AMJ than DS.

A study by Gemser and de Bont (2016) found that *Design* articles published in academic journals were split "between *Design*-focused and *Design*-related communities" (p.57). This finding by Gemser and de Bont (2016) goes some way

to explaining why management and business topics were not the focus for a majority of DS authors.

Study Two identified that the authors in AMJ, DS and HBR write about *Design* using different vocabulary sets. In particular, *Design* communication in management and business had an industrialised focus. On the other hand, although *Design* did write about *Product Design*, it communicated more about *Design* processes and cognitive and conceptual *Design*.

The second study shows there was a stronger connection between management and business professionals than either of those groups had with the *Design professions.* In Study Two, a clearly defined communication gap between *Design* and business professionals emerged.

These findings align with *Symbolic Interactionism.* Particularly the second premise, which refers to the impact our interactions within groups have on our *Design* meaning (Blumer, 1969; Fine & Tavory, 2019).

The second study was a content analysis of published articles. The sample was a census of AMJ, DS and HBR between 2000 – 2017 (18 years). Therefore, the populations analysed could be considered generalisable.

8.1.3 *Conclusions, Recruiting Design*

The sub-research question for Study Three was, how do businesses use the term *Design* in their online job ads?

The social culture of an online job portal, *seek.com.au*, provided the data for Study Three. The data came from online job ad listings responding to the search term, *Design*. The data collection was during a distinct period in 2013 and again in 2019.

A vast number of job ads returned in response to the *Design* search (15,000 in 2013 and 19,000 in 2019). This number was substantially more than the number of job ads listed under the only classification for *Design*: *Design and Architecture* (10% for 2019). This *seek.com.au* job categorisation, *Design and Architecture,* was one of 30 pre-defined titles and the only one with the word *Design*.

The main *Design* job classification for 2019 was *Information & Communication Technology;* then *Engineering* and third, *Design & Architecture*.

In 2019, the majority of *Design* job listings came from Sydney and were full-time opportunities. The leading sub-classification for 2013 and 2019 was *Civil/Structural Engineering*.

In the job wording, the dominant use of *Design* was a noun. However, an increase in design responsibilities in 2019 jobs showed a rise in *Design* as a verb.

There were limited job opportunities related to cognitively focused *Design Thinking*, creativity, innovation or *Human-centred Design* in either 2013 or 2019. However, *Human-centred Design* occurrences increased in 2019 but not enough to determine a pattern. There was a significant number of job ad requests for excellent communication skills. This pattern did reflect an increase in jobs that require teamwork.

These findings are a current reflection of 21st century global patterns of communication in *Design* job ads. The patterns in our thinking reflect the premises of *Symbolic Interactionism* (Blumer, 1969; Fine & Tavory, 2019). The patterns of thinking evident in Study Three shows that business had a clear industrialised view of *Design.*

8.1.4 *Conclusions, Research Question*

The central research question for this thesis was, how do professionals in *Design* and professionals in business communicate the meaning of *Design*?

This research shows that *Design* and business struggle to be 'friends' because they do not share an understanding of the topics most important to either side. Nor do they use the same vocabulary to communicate.

Professionals in business from a diverse range of backgrounds demonstrated that the polysemy of *Design* is evident. Furthermore, our spoken communication about *Design* may differ from our thoughts about it.

Authors from the *Design* disciplines communicated a meaning of *Design* grounded in *Design* procedures and methods. Business, however, communicated a practical meaning for *Design* that seemed more in keeping with their focus on the economy: Industrial *Design*.

Furthermore, management had a separate voice from general business. These two groups shared some meanings, but overall, neither communicated a shared understanding with *Design.*

Similarly, the studies found *Design* did not communicate with business using the language of management and business.

The results show that *Design*, in its own right, had no status in management and limited professional consideration in business.

Professionals in *Design* and business contributed to different *Design* meanings*: Design Frustration*, *Design Confusion*, *Design Ingenuity*, *Design Manifestation*, *Design Translation.*

As a group, *Design* professionals focused on: *Cognitive Design*, *Conceptual Design*, *Design Processes* and *Design Products*.

For professionals in business, the meaning of *Design* sits within industrialisation: *Product Design*.

Despite the unprecedented technological changes occurring in the economy and enhanced global communications, the gap between *Design* and business did not significantly change over the timeframe of this research (2000 – 2019).

The theory of *Symbolic Interactionism* explains the different meanings of professionals within the groups of *Design* and business. Fundamentally, they interact as different social communities and each has its shared meanings (Blumer,1969; Fine & Tavory, 2019). At present, the links between the two groups are not strong enough to close the communication gap.

Gray (2009) notes that every researcher reaches a point where they ask, what does all this mean? Thus, the following section outlines the contributions for this research and details of the *Design-Gap Assumption Model*.

8.2 Contribution

Boland and Collopy (2004) motivated this research with their *Initial Design Vocabulary for Management* (p.267). Hulett (1966, Part Two) inspired through a *Symbolic Interactionist* communication model and Cossette (1998) with a *Symbolic Interactionist* perspective of language in business.

Blumer's (1969) premises provided the first stimulus for linking the study findings. The revitalised *Symbolic Interactionist* principles by Fine and Tavory (2019) further expanded the theory.

The work of CogNexus Institute founder Jeff Conklin and his recommendations for a shared understanding of *Design* (Conklin, 2005, Christensen, 2009) helped clarify the practical application of the *Design-Gap Assumption Model*. This model adapted the Danish *Design Ladder* as its foundation. The Danish *Design Ladder* helps communicate with graphic simplicity the different *Design* stages (Danish Design Centre, 2015; Wrigley & Straker, 2015).

The results of this research are significant. They have shed light on the ongoing communication issues between *Design* and business professionals. The results highlight both sides of the communication problem.

These findings contribute to *Design* practitioners and business and management leaders trying to agree on how to implement *Design* within a structural and economic framework. They could help expand creativity and innovation within an organisation.

The results contribute to a shared understanding of *Design*. They could help avoid breakdowns in communication during cross-disciplinary teamwork when it is essential to have a shared understanding of *Design*.

Furthermore, they contribute to *Design* understanding for the Design disciplines—an essential step in creating a more prestigious *Design* perspective (Smith, 2005).

Policymakers and government organisations could benefit from understanding the vocabulary of both sides, particularly from a *Design* perspective (Boland & Collopy, 2004). Any policy that includes *Design*, innovation or creativity must not assume the public will know what they mean. This research shows that defining *Design* in a report does not do enough to alleviate confusion about *Design*.

Similarly, professionals who advocate for a *Design* policy should not assume people in Government understand *Design*, *Design Thinking*, creativity or innovation.

Alternatively, if they *do* understand these terms, we cannot assume they have the same understanding.

The results assist cross-disciplinary communication, particularly for academics in higher education, responsible for creating tomorrow's professionals and future leaders.

At present human beings are currently facing many unexpected challenges. The theory of *Symbolic Interactionism* is human-centred and, therefore, a suitable foundation for the growing economic interest in *Design Thinking* and *Human-centred Design*.

In this context, *Symbolic Interactionism* could be a foundation for *Design* research. As *Design* has no accepted theoretical position, this study will contribute to the dialogue proposing a theoretical foundation for *Design* (Nelson & Stolterman, 2012).

The results could provide advantages for executive officers, who have no *Design* experience, yet approve *Design* decisions in the workplace.

Similarly, the results could enable communication between professionals and citizen designers or enabled amateurs who contribute to problem-solving and collaborate in the workplace while not trained in *Design*.

At the very least, the *Design-Gap Assumption Model*, outlined in the next section, prompts professionals in *Design* and professionals in business to ask questions of themselves, which could facilitate a closer working relationship.

8.3 The Design-Gap Assumption Model

The *Design-Gap Assumption Model* is a four-step *Symbolic Interactionist* model for managing the communication gap between *Design* professionals and business professionals. The model aims to contribute to peoples' understanding of *Design,* so it sits under *Human-centred Design.*

Blumer's (1969) three premises for *Symbolic Interactionism* and Fine and Tavory's (2019) revitalised version of the premises formed the model's foundation.

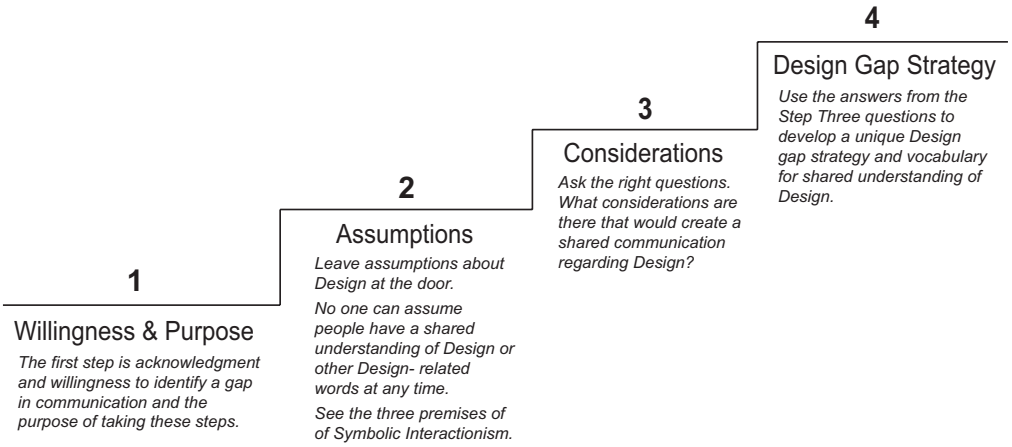
The *Design-Gap Assumption Model* illustrates a series of graduating steps in the shape of a ladder. The *Design Ladder* was first created in 2001 by the *Danish Design Centre.* It has since had wide acceptance in academia and the economy (Danish Design Centre, 2015).

Businesses use the ladder to rate their use of *Design* in comparison to their economic growth. Furthermore, the ladder adapts to different types of *Design* measurement (Wrigley & Straker, 2015).

The *Design-Gap Assumption Model* based on the *Design Ladder* is illustrated in Figure 48.

Figure 47

Design-Gap Assumption Model on the Danish Design Ladder

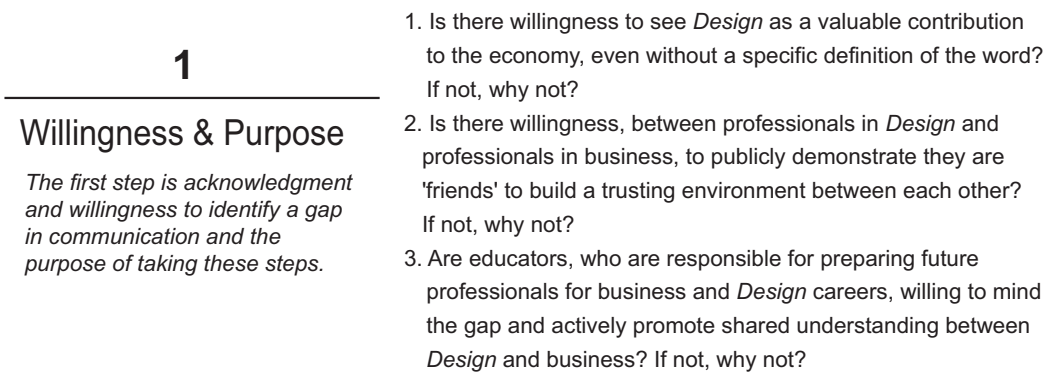


The four steps of the *Design-Gap Assumption Model* founded on the principles of *Symbolic Interactionism*.

The first step of the model recommends professionals acknowledge their willingness to create a *Design-Gap Assumption Strategy* and subsequently define their purpose in taking these steps. Thus, Step one, *Willingness and Purpose*, would begin with a series of questions. See Figure 49.

Figure 48

Design-Gap Assumption Model, Step One

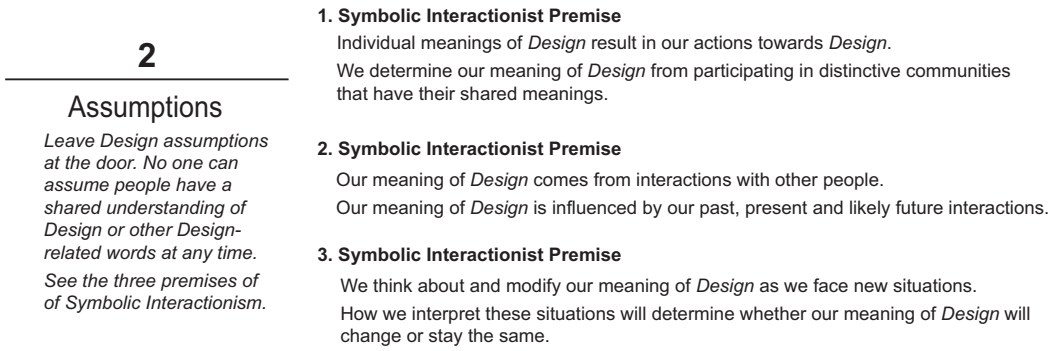


The purpose of the *Design-Gap Assumption Model* is to create a shared understanding of *Design*, not only just in teams but within a company's culture. An organisation could use the model to create awareness of its *Design attitude*. In a large, diverse organisation, this first step, showing 'willingness', could be the most crucial in unifying a group of professional people about *Design* (if that is the purpose). Furthermore, it creates awareness of how vital *Design* is to the company ethos.

Step two, 'Assumptions', is based on the theory of *Symbolic Interactionism*. Figure 50 illustrates Step two and aligns it with the three premises of *Symbolic Interactionism.*

Figure 49

Design-Gap Assumption Model, Step Two



Blumer, H. (1969). *Symbolic interactionism: perspective and method*. University of California Press.

Fine, G. A., & Tavory, I. (2019). Interactionism in the twenty-first century: A letter on being-in-a-meaningful-world. *Symbolic Interaction*, *42*(3), 457- 467.

The hypothesis behind Step two is that even awareness of these premises will stimulate conversation and encourage open and deeper communication about *Design.*

For instance, spelling is subject to assumptions: *Human-centred Design* or *Human-centered Design*. The references to Blumer (1969) and Fine & Tavory (2019) provide an option for users to undertake more exploration of the theory.

IBM, in their *Enterprise Design Thinking* courses for teams in business, provide access to toolkits. One of their toolkits, *Assumptions and Questions*, recommends that:

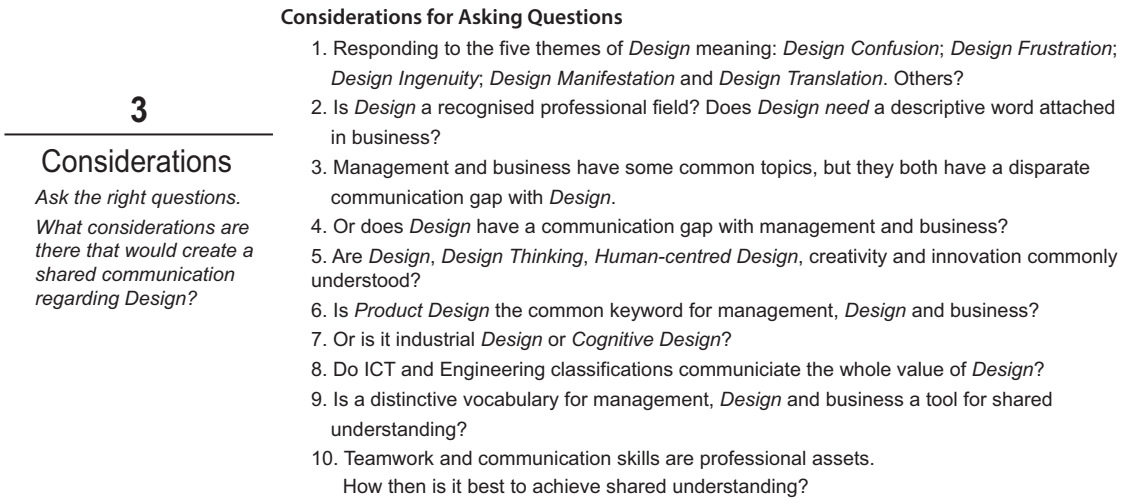
> the sooner you can recognize and evaluate your team's assumptions and questions, the more quickly you can act to reduce the risk they pose (Enterprise Design Thinking, n.d., para.1).

This focus by IBM demonstrates the potential value of the second step in the *Design-Gap Assumption Model*.

The purpose of Step Three is to help professionals to arrive at a shared understanding of *Design*. See Figure 51.

Figure 50

Design-Gap Assumption Model, Step Three



The third step is *Considerations.* These are factors for consideration that can impact professional communication between *Design* and business.

In Step Three, the ten key findings from the results are provided as factors or 'triggers' for consideration and reworded to promote questions that could lead to shared understanding.

Furthermore, the results demonstrate differences between what people said about *Design* and what they thought about it. It responds to the finding that people may have multiple meanings for *Design* or more than one *Design attitude* (Boland & Collopy, 2004).

The fourth step, the *Design-Gap Assumption Strategy*, is the culmination of results from Step one, Step two and Step three.

Words are a critical tool of communication. Boland and Collopy (2004) promoted, a vocabulary for shared understanding and a way to 'get everyone on the same page.' Following Boland and Collopy (2004), the results of this research contributed to a vocabulary relevant to management, *Design* and business.

Figure 52 shows a list of the management, *Design* and business vocabulary word list developed from this research.

Figure 51

Design-Gap Assumption Model, Step Four

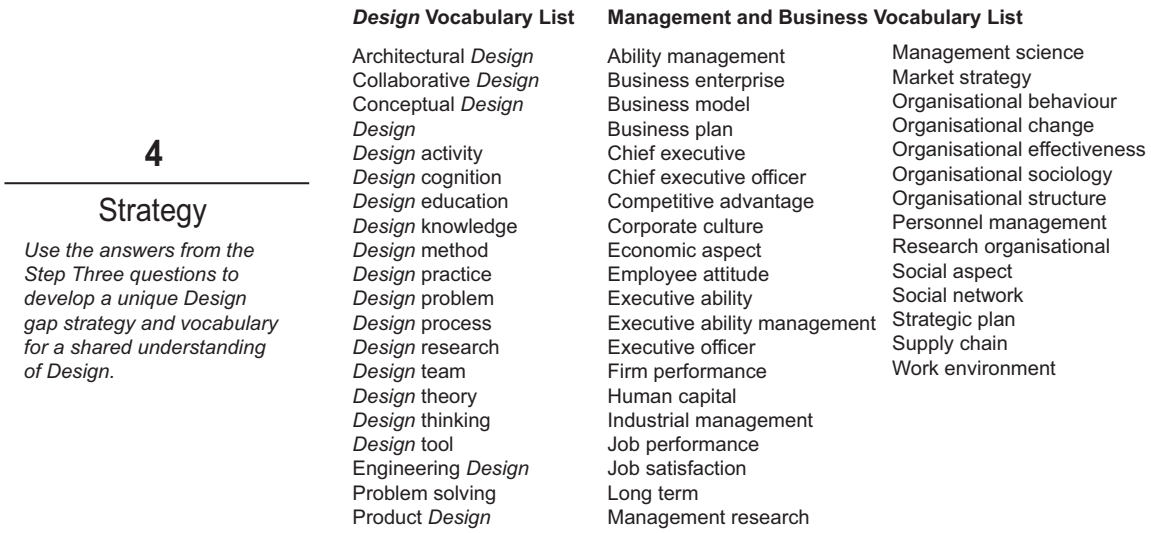


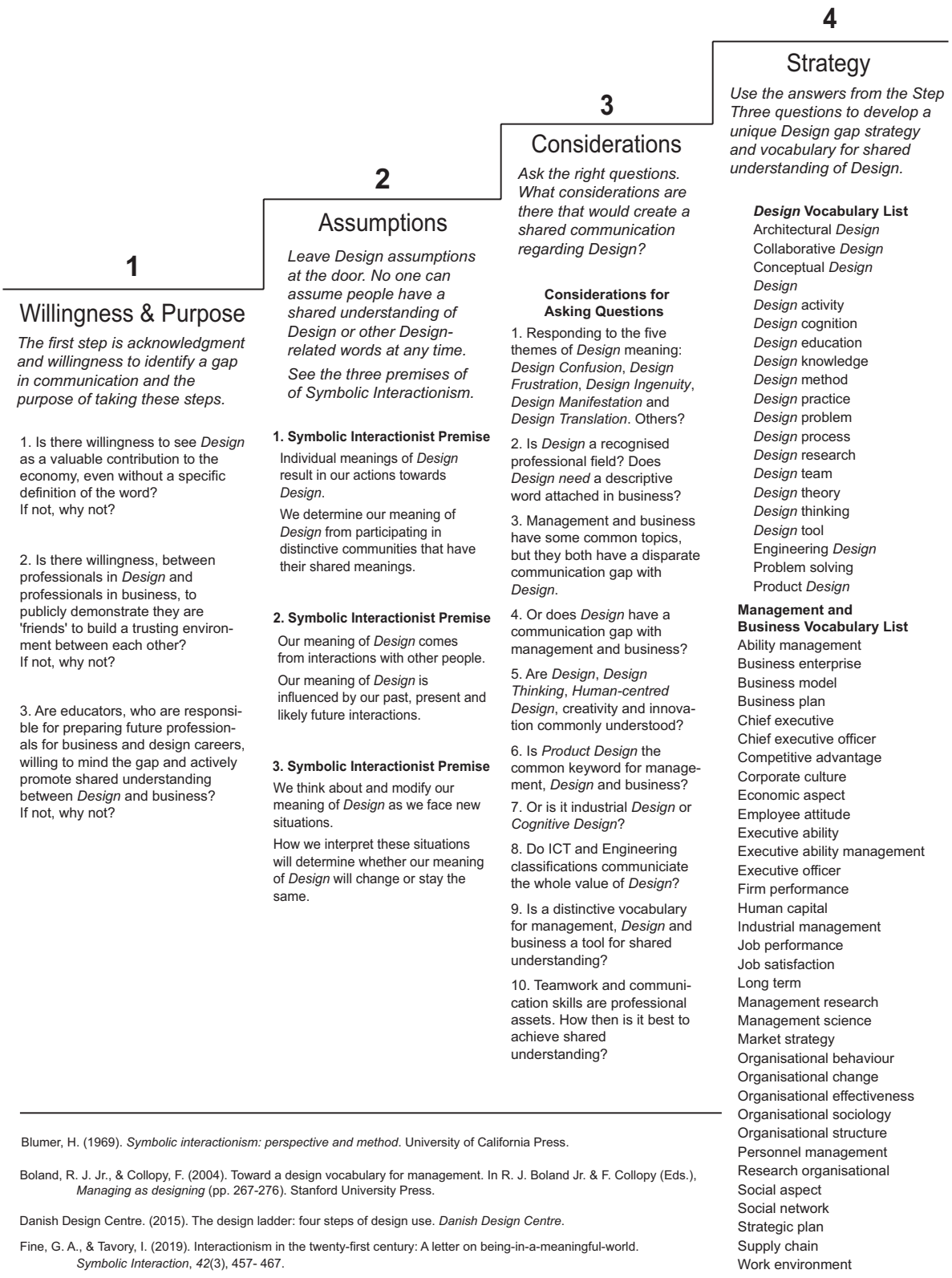
Figure 52 is Step Four *Strategy* in the *Design-Gap Assumption Model.* It is a vocabulary word list emerging from the three studies and offered as a starting point for *Design* and business communication. The vocabulary can be changed to suit individual business requirements. Any vocabulary would also require descriptions.

The following, Figure 53, places all the ladder steps, together, in an illustrated view of the contribution from this research as the *Design-Gap Assumption Model*.

The following sections discuss recommendations and future research directions.

Figure 52

The Complete Design-Gap Assumption Model



Blumer, H. (1969). *Symbolic interactionism: perspective and method*. University of California Press.

Boland, R. J. Jr., & Collopy, F. (2004). Toward a design vocabulary for management. In R. J. Boland Jr. & F. Collopy (Eds.), *Managing as designing* (pp. 267-276). Stanford University Press.

Danish Design Centre. (2015). The design ladder: four steps of design use. *Danish Design Centre*.

Fine, G. A., & Tavory, I. (2019). Interactionism in the twenty-first century: A letter on being-in-a-meaningful-world. *Symbolic Interaction*, *42*(3), 457- 467.

8.4 Recommendations

This research has succeeded in shedding light on the breakdown of communication known to occur between professionals in *Design* and professionals in business. However, the research has also bought to light critical research questions that remain.

The five themes for *Design* meaning: *Design Confusion*, *Design Frustration*, *Design Ingenuity*, *Design Manifestation* and *Design Translation* did not emerge from generalisable results. Thus, an initial question is: Are the themes identified in Study One consistent with a larger population sample? How do professionals in *Design* and business relate to these themes? Are the themes from Study One relevant to professionals in *Design* and business? Moreover, does the meaning of *Design* change with the length of time a person has worked in a particular role?

Symbolic Interactionist perspectives are relevant to phenomenologically oriented questions such as: How do professionals in *Design* and business describe their involvement with specific *Design* topics? In other words, can they recall a time when they participated in a *Design* related project? Can they describe the experience? How did they feel about it?

Furthermore, the multiplicity and almost opposite meanings of *Design* emerging from all three studies need further investigation to explain why problems occur in multi-discipline project teams.

Additional questions such as the following would also be appropriate: How do these themes apply to multi-functional project teams. Are there examples of how these themes may have impacted project failures? What concrete examples are characteristic of communication problems in project teams?

Fundamentally, another question is: How best to test the *Design* themes of *Design Confusion*, *Design Frustration*, *Design Ingenuity*, *Design Manifestation* and *Design Translation*?

In one way or another, all businesses use some form of a business model to manage their contribution to the economy (Wrigley & Bucolo, 2012). With this in mind, how could organisations employ the *Design-Gap Assumption Model* to improve their relationship with *Design, Design Thinking,* innovation and creativity?

Therefore, following Wrigley and Bucolo (2012), future work could examine how the boundaries of an industry-friendly canvas such as the *Business Model Canvas* merges with the *Design-Gap Assumption Model.*

In-depth interviews with Human Resource professionals, who are essentially a link between professionals and employers, which could confirm or extend Study One and Study Three results.

Fine and Tavory (2019) revised premises seemingly open the door for *Symbolic Interactionism* to address the sensitive issues surrounding age, colour and gender in professional *Design* and business communications. Although not covered in this research, these topics are critical to teamwork and collaboration globally.

In light of the global disruption that everyone has experienced during 2020 and beyond, extensions of Study Two and Study Three could stress changes in the economy as the business world recovers. A comparison study of job ads would show whether there were more instances of *Design*, *Design Thinking*, innovation, creativity or *Human-centred Design* in a post-pandemic world.

Similarly, how would the results of Study Two compare or contrast with data from similar but different publications? The researcher recommends *Design Issues*, a highly regarded *Design* journal. Another is the *Journal of International Business Studies*, a highly ranked interdisciplinary journal for organisations and *Bloomberg Businessweek* as a contrast for HBR.

In the same manner, extending the job analysis results to include a freely available creative job portal, such as *theloop.com.au* from Australia, could provide comparative perceptions for *Design* jobs. Other options include a content analysis of job ads on *LinkedIn*. However, restricted access to *LinkedIn* makes it a potentially limiting study. Nevertheless, *indeed.com* could provide an additional option. It is an American online aggregator of worldwide jobs that could provide a more global view of *Design* employment opportunities.

The related question is, how is *Design* communicated in job ads in Australia and globally post 2020?

In this thesis, the theory of *Symbolic Interactionism* provided a solid foundation for reviewing the results. Additional recommendations include further research into the relationship between *Symbolic Interactionism* and *Design.* Is *Symbolic Interactionism* the theory that could unite the *Design* professions? A research question could be: What would be the best research strategy to examine *Symbolic Interactionism* and *Design*? What research benefits could the theory of *Symbolic Interactionism* offer *Design*?

It is clear from reports such as the *Global Innovation Index 2020* (Dutta, Lanvin & Wunsch-Vincent, 2020) that countries support businesses with innovative approaches to competitive advantage. However, on the surface, there appears to be no specific acknowledgement of *Design*.

An important research question for *Design* is, within these innovation index reports: How does *Design* compare with innovation and creativity within innovation index reports?

How is *Design Thinking* and *Human-centred Design* communicated in innovation policies? What countries have *Design* policies compared to innovation policies?

Finally, Martin (2007) asked: *Why can't Design and Business be Friends*? Martin's question formed the foundation of this thesis and ultimately led to the *Design-Gap Assumption Model* (D-GAM*)*.

Step one of the *Design-Gap Assumption Model* is a list of questions that are themselves possible research questions. The questions from the *Design-Gap Assumption Model* are offered here as recommendations for future research questions:

1. Are professionals in *Design* and professionals in business willing to examine their partnership more closely? If not, why not?
2. How willing are professionals to promote a *Design* and business partnership and publicly demonstrate they are 'friends'? If not, why not?
3. Are educators, responsible for preparing future professionals for business and Design careers, willing to promote a shared understanding between *Design* and business? If not, why not?

8.5 Last Words

The global trauma of 2020 came after completing the three studies that underpin this research. In light of the ordeals affecting everyone, it seems to the researcher, the results of this thesis and its recommendations for a shared understanding of *Design* are still very relevant.

Findings from the studies have made it abundantly clear that our *Design attitudes* (Boland & Collopy, 2004; Wrigley & Bocolo, 2012) are individual. If *Design* is the link that can contribute towards an unknown but hopefully improved future, it would be beneficial to create a shared understanding of *Design*.

The reactivation of the *Australian Design Council* in 2020 and the open letter by Prime Minister, Scott Morrison, suggests that the current Australian Government is reconsidering the value of *Design* to the Australian economy.

As this research demonstrates, to engage the public and professionals in *Design*, people must first agree on meaning.

The following comment seems fitting here:

> How can *Design* be better understood by all who need it? Is it not shared human problem solving with purpose, intent, and creative, interdisciplinary collective thinking?
> (J. Brand, personal communication, July 17, 2020).

Considering the words of Fine and Tavory (2019), we see the meaning of *Design* "in patterned ways". The situations in which *Design* patterns occur would either "change or further ossify" as we recognise these "patterns and structures that support these meanings" (p.458).

This research has highlighted minimal changes to the meaning of *Design* between 2000 and 2019. Previously defined *Design attitudes*, patterns and structures still exist. It is possible that if supporters of *Design* cannot find a way to create shared understanding, then the polysemy of *Design* will continue to confuse people.

The researcher hopes this research will go some way towards building a communication bridge between the field of *Design,* whatever that is agreed to be, and business professionals, educators and government policymakers.

Surprisingly, the practice of writing *Design* with a capital D and in italics has become familiar and, for the researcher, assumed a more substantial feeling for *Design*. The researcher is aware that, in future, she will find it strange to write *Design* without a capital D.

Could it be that the act of merely giving *Design* a capital D is a starting point for professional *Design* recognition?

The researcher would like to finish with two questions. Do you, the reader, have a particular meaning aligned with *Design, Design Thinking, Human-centred Design,* creativity and innovation? Have you changed your thinking about any of those words after reading this thesis?

Thank you.

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10. Appendices

Appendix A

Study One Interview Request Email

A request for your participation in an interview about design.

BUHREC Number 0000015315

Dear

I am currently conducting PhD research on the meaning of design for business professionals, under the supervision of Professor Jeff Brand and I am emailing to ask if you would be willing to participate in an informal interview with me? Any knowledge of design is not a requirement and participation is voluntary. You are not required to provide any sensitive information and you will not be identifiable in the final document. Written results of the interviews will reflect de-identified as well as aggregate findings.

Only Professor Brand and I will have access to the names of original participants. If after the interview, you decide you do not want to participate, you may withdraw your interview contribution and your information will be destroyed. Interview transcripts will be stored in a secured location at Bond University for five years by the guidelines set out by the Bond University Human Research Ethics Committee.

The results of the study will contribute to understanding why there is an often-observed communication barrier between business professionals and design professionals. The findings will also contribute to the ongoing research around the value of design to the economy and to academic researchers in higher education who are responsible for preparing future professionals for business and design careers.

If you have any concerns about participation in this research, please contact Professor Jeff Brand by email: jbrand@bond.edu.au

Should you have any complaints concerning the manner in which this research is being conducted, please contact the Bond University Human Research Ethics Committee, Bond University Office of Research Services. Bond University, Gold Coast, 4229, Australia Tel: +61 7 5595 4194, Fax: +61 7 5595 1120 email: ethics@bond.edu.au

Thank you for considering my invitation to participate.
Kind regards,
Jan

Janet Jervis, PhD Candidate
Email: jjervis@bond.edu.au

Appendix B

Study One Interview Release Form

(Original) Project Title: Mind the Gap: Understanding Design Assumptions through the Lens of Symbolic Interactionism.

Bond University Human Ethics Approval Number: 0000015315

Date: _____

Interviewer: _____

File Name: _____

Name of person interviewed: _____

Contact details: _____

I permit the author to quote or paraphrase any portion of the interview, including experiences, recollections, incidents, remarks, dialogue, actions, and information for educational purposes. Educational purposes include presentations, exhibitions and the World Wide Web. I understand Janet Jervis will not publish my personal and identifying information in any format.
Other restrictions as noted:

Name (Please Print) _____

Signature: _____ Date: _____

Researchers Signature: _____ Date: _____

Appendix C

Study One Interview Questions

Semi-structured interviews, of approximately 30 - 45 minutes, will use the guiding questions, outlined below.

First of all, thank you so much for giving of your time to be part of my research study.

Q: I would like to ask you how you feel about *Design*, generally? How would you define the term (*Design*) / what does *Design* mean to you?

Q: And a couple of other words that are often associated with *Design* – what is your perspective on creativity? Innovation?

Q: Are you familiar with the term *Design Thinking*?

Can you tell me what it means to you?

Can you tell me if you use the term at work or in your daily life? If so, in what context?

Great – thank you – next I would like to ask you about your background.

Q: You don't have to tell me your age – but which of the age groups you fit into? 18-24 yrs. 25-35 tears, 36 – 40 years, 40 – 50 years and 50 – 60 years. Other.

Q: Can you tell me how *Design* or creativity was part of your family life while you were growing up? Out of curiosity – where did you grow up?

Q: Have you studied *Design*, in any way, at school or formally?

(If yes, do you have any qualifications in a *Design* related field?)

Next, I would like to ask you some questions about your work.

Q: Please tell me about your company (where you work). Tell me about your official job title? How long have you held this role? Could you briefly describe your position or daily work life?

Q: Do you consider that you work with *Design* in your daily job?

If yes- how and what area of *Design* do you work with the most. If no – do you work with other people that *Design*?

Q: I would love for you to describe if or how your job involves teamwork or collaboration on projects with people from different departments or disciplines?

How you feel about a mixed discipline team environment?

Do you have any examples of good or bad team collaborations?

Q: What programs or software do you use the most - for example software such as Word, or PowerPoint, Photoshop or something else?

Is there a program that you would a) like to b) need to learn? (If so) is that for work or pleasure?

And my last question!

Q: In your daily life, how do you stay informed about *Design*? (If don't) is there a publication that you read regularly that may discuss *Design*?

Now! Do you have any questions for me?

Thank you so much for your time and I will look forward to sharing my findings with you.

Close of interview.

Appendix D

Study One First Cycle In-Vivo Codes – Round Two

The tables presented under Appendix D show the participants words from Round Two of the In-Vivo Coding process. Round Two extracted specific wording from the transcripts and aligned them with the question topic. The table headings correspond to the research questions. For example, Table 55 displays the thoughts that the participants had about *Design.*

Table 55

First Cycle In-Vivo Coding – Round Two

	Thoughts about *Design*
P1	"Confusion - if someone says the word *Design* - it doesn't evoke any strong feelings one way or another".
P2	"*Design* crosses so many industries…I always think of it in a product *Desig*n or a graphic *Design* sense - whatever it is, it's the manipulation of all [that] you know".
P3	"*Design* - is a very vague and saturated word - technically everything is designed in some way or form - *Design* used to hold a lot of respect - now - a bit of a throw around term".
P4	"thought *Design* was for designers - you had to be … qualified, … fashion or an architect … elitist type of label … I - found that I could use my own *Design* skills … I really stretched myself and it changed my life".
P5	"teach you about *Design*? … it's an automatic switch off - no immediate relevance…
P6	"I don't even think about *Design* - nothing I have ever thought about - it's just there or it's not there - people like me - you notice things when they are bad - I'd recognise that more so than good *Design*".
P7	"the best *Design* is invisible…people talk about *Design* they think that is always the art - not the usability and it's not the user experience and it's not that you know the efficiency of it… That's what frustrates me…[people] still think *Design* is abstract - woo woo - with art and colours - "I am not a designer" it is like I am not an artist".

Table 56

First Cycle In-Vivo Coding – Round Two

	***Design* Definitions**
P1	"In engineering…you have an idea …then …create a concept *Design*…then…through to detail *Design*…you create system architectures…then…detail the individual components. How the components work together…operational outcomes etc. called the detailed *Design* process…term *Design* and designer is used heavily and extensively within engineering".
P2	"it's a 'process of creation'… the manipulation of elements relating to whatever industry the *Design's* in to create something".
P3	"*Design* means … somebody with…creative sight…can…put forward their vision and manifest what's in their mind".

	***Design* Definitions**
P4	"The skeleton of something… in conceptual form or solid form…you can *Design* around an idea …not necessarily…a solid object …it can be…I think it's the thread, it's like a skeleton …The bones of something… conceptual, or real."
P5	[*Design* is] "Imagination. [Do you define it?] "Not really. How to define *Design* mixed in with imagination, I would suppose that would just be down to the individual. Individuality"
P6	"It's not something I have thought about too deeply... my first reaction is *Design* would be like art, that's how I think of it, as art, on paper, or some like that or sculpture or something I think of that as *Design*. But I know it can be more functional thinks like letterhead, logo and things like that, I understand that's *Design* too".
P7	"To me, [*Design*] it's 'translation'. So, translation in the sense that if you are at a restaurant or you're trying to tell traffic which way to go, whatever, …there is some sort of thing, you want people to think or understand or do and you are needing to translate that into a language that they understand so that they are empowered to do it. That's *Design* to me…In a sense you are a designer. Because you are helping me understand the information".

Table 57

First Cycle In-Vivo Coding – Round Two

	Design Thinking
P1	"I can guestimate…but… never…heard the term…Some …mode of thought of trying to …creatively and innovatively solve issues rather than business issue and practices."
P2	"Yes [I have heard of the term] … but I haven't personally used it".
P3	"It's not common I don't think. Unless you are in a very certain type of workplace or like a certain environment, but it's … something that I feel is going to become more common, yeah. Not me personally, but it is around the workplace, one of the workplaces I am in, it is used quite commonly. I might do it kind of just without realising it, but I don't sort of preach *Design Thinking"*.
P4	"I have heard it, but I don't use it. I am not sure I fully understand it."
P5	"Never heard of it."
P6	"No. Well, I might have, but I have forgotten if I have. *Design Thinking*? Um …no I'm sorry".
P7	"I do use it. Partly because of just the corporate world and that's a term that people love. *Design Thinking*, it makes it sound like, it's the new "innovation" in my mind. You know innovation now has kind of got a bit boring, it's gotten a bit scientific, whereas *Design Thinking* now sounds kind of edgy, and original and creative, but to me it's the same sort of, we're doing the same principle. There are people who I think are more predisposed because they might have *Design* exposure… it really depends on who the audience is".

Table 58

First Cycle In-Vivo Coding – Round Two

	Creativity
P1	"I associate the word creativity with *Design"*.
P2	"Creativity is … a mind-set and a thought process… you can't measure creativity … people draw a picture…one looks better than the other one… doesn't mean one is more creative than the other, it just means one is more skilled than the other…it's…lateral thinking, open-mindedness and ability".
P3	"creativity… something that's always going to be around, … it's a bit of a feeling… something that people possess whether they tend to unlock it or use it or … don't use it, …very debatable… there's a lot of people out there that create that aren't necessarily creative".
P4	"Creativity … that's a hard one… when…you start looking at things from different angles, different perspectives…something might appear blue…look at it a completely different way or turn it upside down or throw it in a different light, it might be yellow…something within a form, that becomes a different form. I don't know how to explain that properly".
P5	"something that's unique and genuine and something you have just thought about".
P6	"people who come up with new ideas … in their head, like creatives, arty type people, people who make things or *Design* things … it can be with the hands, like manual creativity like sculptures, woodworkers and that kind of thing. I think it covers a broad range of… stuff!".
P7	"I think naturally every human being on the planet is creative …because it doesn't necessarily fit a certain convention doesn't make it right or wrong. I feel like both creative and innovation are these constructed words in order to compartmentalise people. So, when someone says, "I am not creative" it's like well, why, by what rules?".

Table 59

First Cycle In-Vivo Coding – Round Two

	Innovation
P1	"Engineering *Design* … vast majority…of innovation… business processes, or organisational processes and procedures … attempts to make things more efficient".
P2	"Innovation…it's … a strategy…and…thought process of…how can we push this to the next level …a conscious strategy to take something and push it outside of its box".
P3	"a buzz word … I am biased because one of my roles is … in an 'innovation hub' … immune to the whole innovation world, … business worlds are constructed around that word and how they are … perceived and projected onto the community…to me innovation … [is] applied to any company or product really - which is quite funny".
P4	Innovation… forward thought, …left of centre…It's something that hasn't been done before in that particular way, if something is innovative, it's looked at from a completely different perspective".
P5	"Can't elaborate on that. I don't know. No, doesn't mean anything to me".
P6	"I've heard of it –I have ever thought about much…it would be people leaders that are out the front of the pack".

	Innovation
P7	"Innovation feels just like a corporate buzzword to me. It's an act of doing, I am 'doing' creativity … like this strategic strategy corporate buzzword, to try and "I don't know how we can sell creativity and ideas but make it not sound so 'woo-woo' and make it sound more, like commercially responsible. Let's call it innovation'. That's to me, where I feel like it comes from".

Table 60

First Cycle In-Vivo Coding – Round Two

	***Design* Growing Up**
P1	"Mum… interested in craft…lot of designing and creating… my childhood… drew a lot…doodling…I don't associate that with *Design"*.
P2	"Yes…with Mum…in the fashion industry… working on different side projects … collages or jewellery making… meditations … all kind of creativity in some sort of form".
P3	"Two of my grandparents are artists, painters and illustrators. I think from an early age it was always quite prominent in my family. Not immediate family, but extended family. I was the only one in my family that was creative...now ...my sister is more creative than what she was when she was younger, but my other siblings aren't creative at all".
P4	"My sister had a lot of influence on me in terms of *Design* and that was because she used to go to art college, and she was very much in the *Design* world…I wasn't particularly artistic…So I used to find it very impressive, and I used to watch it with some amazement".
P5	No answer
P6	No answer
P7	"It was never like this acceptance of, that is just the way it is, and you don't question it. I feel like a lot of that, yeah, that creativity and innovative thinking, I suppose, is [why] I have been willing to go against, not the convention, but maybe - that is not the only way of doing something".

Table 61

First Cycle In-Vivo Coding – Round Two

	Education
P1	High school…art. Bachelor of Science Security
P2	"[School] photography…". "Bachelor Marketing & Public Relations. Uni …marketing and PR ...isn't so *Design* based…more strategic… such a crossover! Designers in a graphic *Design*…using those marketing strategies to create '*Design*'…but …doesn't necessarily go marketers are using *Design*. I graduated in 2010…never even covered social media…definitely lacking…not really how it works in the workforce".

	Education
P3	[School] "I guess all of my courses were sort of anchored around anything art or computer related… art and digital *Design*, I did history as well, so it was anything computer arts-related…I studied graphic *Design* - so 3 years or 31/2, three or four years or so, up to an *Advanced Diploma of Graphic Design*, *Majoring in Advertising"*.
P4	"No formal studies of *Design* at all, really. I did art at school but that was restricted to high school art, no qualifications .... So, I don't know, would dance come into *Design*? Because, from a creative stand I used to do a lot of dancing".
P5	"Subjects at school, IT…. but that was just natural [to me] just trying to learn building computers, software and hardware, that type of thing so that had a part to play in understanding Word, Excel spreadsheets and motherboards etc. etc… *Craft and Design*, funny enough. My fondest memory of that was actually building a table out of just imagination… was great to see what was in my head … and I've still got it". "Yep. Went to college and did advanced Maths and Spanish. It was working towards a degree … but that was short lived. I only did that for 6 months because I got offered the job. Decisions were kind of made for you back then. What path to choose, so that's the joy of youth".
P6	[School] "Not really". "I haven't studied any formal *Design*… I used to make jewellery and I have read a lot of books on jewellery making and looked at lot of jewellery *Designs*. I did a course on jewellery making. It covered one lesson on *Design*, but it didn't go in depth to *Desig*n. It was more … technical skills …that would be the closest I have come to studying it. I have bought a book on *Design* layouts - *The Non-Designers Design Book* … I learnt a lot from that but that was aimed at desktop publishing *Design*… I learnt things like white space and all the basics, so I know a little bit about it but nothing formal".
P7	"I did Film and TV in high school, I did woodworking, and metalwork. I suppose they are forms of *Design*; I like product *Design*. You know, I did a lot of creative writing; I suppose that's a form of *Design*. I never went to university. Never went to art school or *Design* school".

Table 62

First Cycle In-Vivo Coding – Round Two

	Design at Work
P1	"Engineering *Design*, yes. I am involved in the *Design* process - not currently doing *Design*. I am not the designer - a project management role - we'll package that up to go to the delivery group which will include detailed *Design* and construction".
P2	"I am a client liaison officer [for a] heavily *Design* focused architectural and sculptural [outdoor product] …designed specifically with artwork … creative focus - concentrating on place …community interactions ..role [is] inbound and outbound enquiry liaison. Managing people …local government …community officers".
P3	"My role is multifaceted - one day, I might - 80% *Design* - it might be 80% social media - art directing video shoots - creative role, an individual role - between writing, *Design*, social media, photography and probably just art direction in general. I am always working and directing other creatives".
P4	"Well, my job description has recently changed quite dramatically; I have gone back into more office-based work and less creative work. But yes, we still work with *Design*. Because you have to *Design* the marketing side of the business and because I am actually doing three different separate type of jobs. Do I work with *Design* in all of them? Yes, I guess I do. Not in the obvious way, where you sit down and draw something or you

Design at Work	
	create something every time, but you have to use the principles of *Design* every day, I feel, I do".
P5	"Yeah, work - I would have to *Design*, basically, a package suited to each individual client … based on their needs and wants. So that is tailored to them…Once I've got all that information collated …5 different options … I would translate that …to them …very autonomous and peripatetic…no day is the same. I get to see all areas…a lot involved mentally but really enjoyable".
P6	"You know, I wouldn't really call it work, but I work it like it's work, it's like a part-time job you know, I spent 3 days doing it - but I enjoy doing it. I blog for a hobby, and its niche blog to do with the cutting machine and I *Design* [cutting machine] files that people can use to cut on their own machines, and I give away the free files on my blog".
P7	"I work for myself … in a consulting position capacity for Fortune 500 companies, [to] start-ups. I guess the equivalent in Australia would be the BRW 500 or top 500 publicly listed companies … from small start-ups to huge… I offer them a way of solving the problem as a multidisciplinary group of people, knowing that most of the time that this group of people are not just designers, they're marketers, they're business people, they're customer service people, they're customers, they're engineers, they're product managers, they are C level, answering to shareholders". I have probably been doing that function for most of my career, I just didn't realise it. So, it has only been recently, that all I do now is just *Design* sprint coaching in itself. I would have led *Design* sprints and coached people and whatever, but I just did it under the helmet of UX designer".

Table 63

First Cycle In-Vivo Coding – Round Two

Teamwork	
P1	"The current role…there is a team, though we have our separate projects…a number of stakeholders. …won't be …full-time basis we … seek…input in the areas of their expertise…teams are fine… it's …engineering … if mistakes aren't caught, things …built wrong…safety hazards…cost, time and money to major projects. There is…drive to make sure requirements and styles are understood so …everyone can be on the same page…It is … interesting to try and match expectations [with] outputs [from] designers. Especially… Engineering …*Design* drafters … also get…tracers who will take what you mark up on a plan…literally draw it out… lead to inadvertent…[funny] errors … a note saying, 'check this'…they'll type out 'check this'… [not] check it".
P2	"[I] prefer it … especially with *Design* and creativity… can't … achieve… same sort of things … one person… freelancers…do it… in terms of coming up with strategies and rollouts and things like that … a 'bad' working team - combining two companies…if the designers aren't seeing eye to eye…not willing to compromise … It's been challenging… not an internal team … going more external".
P3	"…multiple people… in decision making …can become too many cooks in the kitchen… might have disagreements … at the same time I have had the complete opposite …five people completely agree … it depends on the … people …form the team and the individuals within those teams… some teams … synchronise … you learn a lot … all inspire each other … the end product …better than what it would be if you did it by yourself… I like to work by myself and be in control of everything … being outputted … having a team around you…depends on how you structure the team… multiple people with multiple skills, then you can mix and match and make a better team than if you tried to teach yourself all of those skills".

Teamwork	
P4	"[Teams] can be challenging … if you get people…different … "wavelengths" … people who think about things from a different perspective … are … the way that you continue to grow … being the second half of the baby boomer generation, there's … challenges in taking on new technology … or new ideas. …you have to teach yourself be very adaptable, because it is always changing, always moving… I have learnt through collaboration …just because you used to do it a certain way doesn't mean you do anymore [in the past] all you had to do was learn the pattern. Now, you've got to keep learning, re learning, re looking at it, coming back in from different ideas because its, the whole concept …changes all the time and it moves around. You need a reality check all the time".
P5	"Good team collaborations would be … everybody's always willing to help, if they're not they will tell me … no…Any bad team collaborations I haven't really came across in this field at all …. purely down to mutual respect either way. There's no fighting towards or for wanting this done 'let's get it done', it's just a mutual respect".
P6	"I would rather just do my own thing rather than being in a collaboration where I am not actually doing the bits I want to do. Other teamwork, no I can't really think of it - I haven't really had any instances that I can draw on… I am OK working with people but as a one-off thing not as a continual thing. Although it's not like I don't work well with others … we do things in blogging where I do 'blog hops" but that's not like a creative collaboration it's a 'let's work together to promote this' sort of thing collaboration".
P7	"my work life …I often go into teams … something's not working… generally, there's a sense of helplessness in the group, pointing fingers and don't know where to go … in these companies… have to try and get to the bottom of what's not actually working…people will tell you what's not working … often there is a deeper cultural issue…how they feel they can solve a problem…I don't think there is good or bad teams... mixed discipline team … at some point in any system … one thing not to work and that's the weak point… more often … it doesn't work … because the people involved, hate it…. if they… got to contribute in a meaningful way…potentially would enjoy the job more… teams that have figured out this distinction of group…then there are those who haven't…not good or bad". Everyone has their strong suit … you tend to get silos in the way that people solve things … designers always complain about engineers, engineers always complain about designers and they always complain about MBAs…but they're apparently all on the same team trying to solve the same problem and they all go into a meeting and tolerate each other…reality is … all have something different to bring to the table and it all needs to work together … someone …the most vocal person in the room, and in an environment with business people, marketers and designers it is almost always the business people … if they're removed out of the room then it is always the designers… a dominant alpha and they just steamroll… if the CEO's an engineer and developed a whole company culture around one particular specialty generally, you find the culture does not support the others… *Design* is the enemy … '*Design*, oh, these designers they are always making things pretty and complicated and we have to build it'… I will tell you a sentence that changes everything "*we are all designing. I solve my problems with pixels, you solve your problems with code, and he solves his problem with words. And we're all designers*".

Table 64

First Cycle In-Vivo Coding – Round Two

Participants	Keeping Informed
P1	"Penny Arcade comic… three times a week… video game comic…I keep up with various things but not on the *Design* side…technology developments … [my workplace] compile the last weeks news articles … related stories broken down into various categories such as sustainability, automation, legislative changes etc… [I] flick through that index.com for interesting items".
P2	"For work…I read a lot…Urban Developer …property development blogs…relevant to…our markets … from more a *Design* perspective … Acclaim magazine online…street based. Hypebeast…male focused…interesting looking at *Design*…in a men's focused lifestyle setting, not female".
P3	"I'll bounce between multiple kind of sources that aren't linked…a lot of them are not even similar in some ways … information comes from various spots…usually the social media feeds that's my main feed to sources … Instagram, Facebook … I'll usually see something I like and then follow that through…I don't have time go in depth…where I would source publications or print media and I would go and get a coffee and sit down and read it…half a story online… on to the next thing… person that lives online… I love tangible, printed media it's just the reality of what I do…I shy away…subscribe to or pay any kind of monthly arrangement fee … Internet is our oyster…so much information out there…don't need to search hard in order to get free content…stories are probably on another 15 other sources…I am savvy enough to just avoid paying it".
P4	"I think I am quite deliberate with my wanting to stay informed because it is so inspiring to me…the essence of *Design* in everything, every category is very inspiring…reading, researching on the net, talking to people and I think when you are working too…talk to people within the industry... purposely do read a lot of magazines… jumper around-er".
P5	No answer recorded.
P6	"I read…what my peers are doing … mainstream craft…what crafty people are doing in the world…not…look too much I don't want to just copy other ideas… it's very hard, it seems…a universal consciousness…I'll think of things…original…the day I've published my blog post…three crafters have [posted] a similar thing. Independently".
P7	"I read like it's going out of fashion…a lot of blogs…Quora…articles…books, I watch a lot of videos, I talk to a lot of friends, I chat every day…*Design* friends…just random stuff… go for beers…challenging each other, arguing about stuff, the way of the world, the way things are…I always put myself in situations where I must learn… I write a lot…consume…tens of thousands of words in a day … I am all about objectivity…biggest challenge…going to an environment…if I am subjective or I have a belief…I am not serving them well…trying to get this very well-rounded picture of what is the vernacular, the language, the perspective on these things…sometimes you just need to figure out how to communicate better".

Appendix E

Study Two Design Keywords for AMJ, DS & HBR

The following tables under Appendix E present a frequency summary of the journal keywords for AMJ, DS and HBR. The tables show the results for three six-year periods: Period I (January 2000 – December 2005), Period II (January 2006 to December 2011) and Period III (January 2012 to December 2017) and the total number of *Design* keyword categories for the period and study timeframe.

The tables display a number and a times symbol with the keyword (5 X Product *Design)*. The number represents the number of times that keyword appeared during the period. Furthermore, in some instances, a journal used capital letters in the keywords, as shown in the tables. The journal DS has substantially more *Design* keyword categories than the other two journals, AMJ and HBR.

Table 65

AMJ Design Keyword Categories and Frequency

Period I	Period II	Period III
5 X Product *Design*	1 X Replication (Experimental *Design*)	3 X Experimental *Design*
1 X Experimental *Design*	1 X Space vehicles – *Design* & construction	1 X Cell phone *Design* & construction
1 X Work *Design*		1 X Fashion designers – Psychology
		1 X Repeated measures *Design*
		1 X WORK design
Design Keywords 6 / 4,198 (0.1%)	*Design* Keywords 2 / 3,407 (0.1%)	*Design* Keywords 7 / 3,248 (0.2%)
Period I *Design* categories 3	Period II *Design* categories 2	Period III *Design* categories 5
Overall (2000-2017) *Design* keyword categories		8

Table 66

DS Design Keyword Categories and Frequency

Period I		Period II		Period II	
28 X	*Design* process	25 X	*Design* process	28 X	*Design* education
27 X	Conceptual *Design*	24 X	*Design* cognition	27 X	*Design* cognition
26 X	*Design* cognition	22 X	Conceptual *Design*	22 X	Conceptual *Design*
26 X	Product *Design*	21 X	*Design* education	18 X	*Design* process
25 X	Engineering *Design*	17 X	Collaborative *Design*	18 X	*Design* research
22 X	*Design* education	16 X	*Design* practice	17 X	*Design* activity
21 X	Collaborative *Design*	15 X	Engineering *Design*	17 X	Engineering *Design*
18 X	Architectural *Design*	14 X	Architectural *Design*	16 X	Product *Design*
14 X	*Design* knowledge	14 X	*Design* activity	15 X	Architectural *Design*
14 X	*Design* research	14 X	*Design* theory	15 X	Collaborative *Design*
14 X	*Design* theory	14 X	Product *Design*	14 X	*Design* theory
13 X	*Design* methodology	13 X	*Design* knowledge	13 X	*Design* tools
13 X	Philosophy of *Design*	13 X	*Design* tools	12 X	User centered *Design*
11 X	Computer supported *Design*	9 X	*Design* management	11 X	*Design* behavior / behaviour
11 X	*Design* management	9 X	Industrial *Design*	11 X	*Design* practice
11 X	*Design* tools	9 X	Interface *Design*	10 X	*Design* methods
10 X	*Design* activity	9 X	Philosophy of *Design*	10 X	Parametric *Design*
10 X	*Design* strategy	8 X	Creative *Design*	10 X	Philosophy of *Design*
9 X	Computer aided *Design*	8 X	*Design* techniques	9 X	*Design* methodology
9 X	*Design* practice	7 X	*Design* methodology	9 X	Psychology of *Design*
9 X	Industrial *Design*	7 X	Software *Design*	8 X	Computer aided *Design*
6 X	Computer-aided *Design*	6 X	*Design* processes	7 X	Creative *Design*

Period I		Period II		Period II	
6 X	*Design* studies	6 X	*Design* strategy	7 X	*Design* knowledge
6 X	Psychology of *Design*	6 X	Interaction *Design*	7 X	*Design* processes
5 X	*Design* behaviour	5 X	Computer aided *Design*	7 X	*Design* science
5 X	*Design* methods	5 X	*Design* research	6 X	*Design thinking*
4 X	Creative *Design*	5 X	Graphic *Design*	6 X	Digital *Design*
4 X	Social *Design*	4 X	*Design* behaviour	6 X	Graphic *Design*
3 X	*Design* history	4 X	*Design* methods	6 X	Industrial *Design*
3 X	*Design* method	4 X	*Design* problems	5 X	*Design* method
3 X	*Design* model	4 X	Psychology of *Design*	5 X	Interaction *Design*
3 X	*Design* models	3 X	Computer supported *Design*	5 X	Participatory *Design*
3 X	*Design* precedents	3 X	Computer-aided *Design*	4 X	*Design* fixation
3 X	*Design* processes	3 X	*Design* rationale	4 X	Design precedents
3 X	*Design* science	3 X	Distributed *Design*	4 X	*Design* studies
3 X	Eco *Design*	3 X	Environmental *Design*	4 X	Distributed V
3 X	System *Design*	3 X	User-centred *Design*	4 X	Eco *Design*
2 X	Automotive *Design*	2 X	Automotive *Design*	4 X	Software *Design*
2 X	*Design* automation	2 X	*Design* history	4 X	System *Design*
2 X	*Design* model(s)	2 X	*Design* method(s)	3 X	*Design* problems
2 X	*Design* philosophy	2 X	*Design* model(s)	3 X	*Design* strategy
2 X	*Design* problems	2 X	*Design* models	3 X	*Design* techniques
2 X	*Design* process(es)	2 X	*Design* requirements	3 X	*Design* technology
2 X	*Design* techniques	2 X	*Design* studies	3 X	Interface *Design*
2 X	*Design* technology	2 X	*Design* technology	3 X	Social *Design*
2 X	Distributed *Design*	2 X	*Design Thinking*	3 X	Systems *Design*
2 X	Environmental *Design*	2 X	Interior *Design*	3 X	Urban *Design*
2 X	Graphic *Design*	2 X	Social *Design*	2 X	Automotive *Design*
2 X	Information *Design*	2 X	System(s) *Design*	2 X	Behavioural *Design*

Period I		Period II		Period II	
2 X	Interface *Design*	2 X	Systems *Design*	2 X	Computer supported *Design*
2 X	Intuitive *Design*	2 X	Urban *Design*	2 X	*Design* automation
2 X	logic of *Design*	1 X	Automated *Design*	2 X	*Design* creativity
2 X	Science of *Design*	1 X	Biologically inspired *Design*	2 X	*Design* ideation
2 X	Systems *Design*	1 X	Cognitive *Design* research	2 X	*Design* management
2 X	Urban *Design*	1 X	Creative process	2 X	*Design* method(s)
1 X	Conceptual *Design* methodology	1 X	Cultural aspects of *Design*	2 X	*Design* model
1 X	Concurrent *Design*	1 X	Decision making	2 X	*Design* process(es)
1 X	*Design*	1 X	*Design* audit	2 X	Environmental *Design*
1 X	*Design* discourse	1 X	*Design* automation	2 X	Multidisciplinary *Design* teams
1 X	*Design* errors	1 X	*Design* effectiveness	2 X	Science of *Design*
1 X	*Design* expertise	1 X	*Design* ethics	2 X	Service *Design*
1 X	*Design* ideation	1 X	*Design* fixation	1 X	Biologically Inspired *Design*
1 X	*Design* modelling	1 X	*Design* flow	1 X	Biomimetic/biologically inspired *Design*
1 X	*Design* problem solving	1 X	*Design* heuristics	1 X	Co- *Design*
1 X	*Design* rationale	1 X	*Design* ideas	1 X	Community *Design*
1 X	*Design* repository	1 X	*Design* ideation	1 X	Computer aided architectural *Design*
1 X	*Design* representation	1 X	*Design* leadership	1 X	Computer-supported collaborative *Design*
1 X	*Design* situatedness	1 X	*Design* model	1 X	Decision making
1 X	*Design* strategies	1 X	*Design* philosophy	1 X	*Design* activities
1 X	*Design* teaching	1 X	*Design* precedents	1 X	*Design* and science
1 X	*Design* technique	1 X	*Design* reasoning	1 X	*Design* and surprise
1 X	*Design* tool	1 X	*Design* strategies	1 X	*Design* brief
1 X	Generic *Design*	1 X	*Design* tool	1 X	*Design* by analogy
1 X	Ideal *Design* approach	1 X	*Design* visuals	1 X	*Design* coaching
1 X	Innovative *Design*	1 X	Digital *Design*	1 X	*Design* communication
1 X	Product representations in *Design*	1 X	Digital *Design* knowledge	1 X	*Design* critique

Period I		Period II		Period II	
1 X	Service *Design*	1 X	Digital *Design* media	1 X	*Design* critiquing
1 X	Software *Design* n	1 X	Digital *Design* theory	1 X	*Design* epistemology
1 X	Systematic *Design*	1 X	Eco *Design*	1 X	*Design* evaluation
1 X	Web-based *Design*	1 X	Games *Design*	1 X	*Design* expertise
465		1 X	Generative *Design*	1 X	*Design* exploration
		1 X	Generic *Design*	1 X	*Design* feedback
		1 X	Language of *Design*	1 X	*Design* flow
		1 X	Logic of *Design*	1 X	*Design* for behavior change
		1 X	Parametric *Design*	1 X	*Design* for sustainability
		1 X	Participatory *Design*	1 X	*Design* history
		1 X	Performance-based *Design*	1 X	*Design* judgement
		1 X	Problem solving	1 X	*Design* model(s)
		1 X	Requirement-driven *Design*	1 X	*Design* negotiation
		1 X	Service *Design*	1 X	*Design* performance
		1 X	Silent d *Design*	1 X	*Design* process modelling
		1 X	Sociology of *Design*	1 X	*Design* rationale
		1 X	Spatial *Design*	1 X	*Design* reasoning
		1 X	Structural *Design*	1 X	*Design* representation
		1 X	System *Design*	1 X	*Design* representations
		1 X	User–designer differences	1 X	*Design* requirements
		1 X	Values in *Design*	1 X	*Design* space
		1 X	Whole system *Design*	1 X	*Design* strategies
		1 X	3D concept *Design*	1 X	*Design* studios
		430		1 X	*Design* team
				1 X	*Design* -by-analogy
				1 X	*Design* Art
				1 X	Designer activity
				1 X	Designer behaviour
				1 X	Designer formation
				1 X	Educational *Design*
				1 X	Effect-driven *Design*

Period I	Period II	Period II	
		1 X	Generative *Design*
		1 X	Generic *Design*
		1 X	Healthcare *Design*
		1 X	Human-centred *Design*
		1 X	Inclusive *Design*
		1 X	Information *Design*
		1 X	Iinterior *Design*
		1 X	Iterative *Design*
		1 X	Job *Design*
		1 X	Kinematic *Designs*
		1 X	Logic of *Design*
		1 X	Medical device *Design*
		1 X	Mixed media *Design* environments
		1 X	Novice designers
		1 X	Ownership effect in *Design*
		1 X	Parametric *Design thinking*
		1 X	Redesign
		1 X	Sustainable *Design*
		1 X	Universal *Design*
		1 X	User interface *Design*
		1 X	Value of urban *Design*
		524	
Period I *Design* categories 465	Period II *Design* categories 430	Period III *Design* categories 524	
Overall (2000-2017) *Design* keyword categories		1,419	

Table 67

HBR Design Keyword Categories and Frequency

Period I	Period II	Period III
Product *Design* x 5	Product *Design* x 6	*Design* x 4
Web *Design* x 3	*Design* x 2	Product *Design* x 4
Architectural *Design* /s x 2	Leadership in Energy & Environment *Design* Green Building Rating System x 2	Product *Design* – social aspects x1

Period I	Period II	Period III
User-centered system *Design* x 2	*Design* – Research x 1	Designers x 1
Industrial *Design* - Economic aspects x 2	*Design* & technology x 1	Designers– Training x 1
Art of innovation: lessons in creativity from IDEO, America's Leading Design Firm x 1	Designers – Psychology x 1	Designers – Attitudes x 1
Board Game-*Design* & construction x 1	Knives – *Design* & construction x 1	*Design Thinking* x 1
Department stores – *Design* & construction x 1	BOEING 777 (Jet transport) Design & construction x 1	Fashion *Design* -Economic aspects x 1
Design protection x 1	Communication in engineering design x 1;	Offices - *Design* & construction x 1
Engineering *Design* x 1	Database *Design* x 1;	Engineering *Design* x 1
Experimental *Design* x 1	Experimental *Design* x 1	Smartphones – *Design* & construction x 1
Industrial *Design* management x 1	Factories – *Design* & construction x 1	Stanford University – Hasso Plattner Institute of *Design* x 1
Work *Design* x 1	Industrial *Design* – Social aspects x 1;	Television sets – *Design* & construction x 1
	Sustainable building – *Design* & construction x 1;	
	User-centered system *Design* x 1;	
	Web *Design* x 1;	
	Work *Design* x 1;	
	Work environment – Banner free *Design* x 1	
Design Keywords 22/ 8,458 (0.3%)	*Design* Keywords 25 / 5,907 (0.4%)	*Design* Keywords 19 / 3,762 (0.5%)
Period I *Design* categories 13	Period II *Design* categories 18	Period III *Design* categories 13
Overall (2000-2017) *Design* keyword categories		36

Appendix F

Study Three 2013 Codebook

The following images are screenshots of the original *Survey Monkey* 2013 code book for Study 3: *Recruiting Design.* This codebook was copied into *qualtrics* for a repeat of the study in 2019.

Seek Design Content Analysis Codebook

Codesheet

Instructions:
Step 1: Read the FULL LISTING FIRST ... before coding below; this will give you awareness of the entire contents and context of the listing.
Step 2: Read codebook question, then seek answer from job listing (every listing is different and content related to one coding item will rarely be in the same place from one listing to the next).
Step 3: Enter responses in codebook; Make a note of unusual or problem issues in the last text box on the codebook.

1. Person Completing this Content Analysis

2. Case ID

3-Digit ID (001-400)

3. Date Job Posted

Date

DD/MM/YYYY

4. Job Title - explicitly stated

5. Where is design mentioned?

- [ ] Title/Heading
- [ ] Body

6. Location (First Listed)

7. Salary / Wages
(If stated salary range in ad overlaps with ranges below, take midpoint of stated salary range to then select from the ranges below.)

1

8. Work type

- ◯ Full-time
- ◯ Part-time
- ◯ Contract/Temp
- ◯ Casual/Vacancy
- ◯ Other (please specify)

9. Classification (First Listed)

10. Sub-Classification (Second Listed)

11. Design Fields or Disciplines (explicitly stated)

- ☐ Architecture
- ☐ Industrial Design (prepare products for manufacture)
- ☐ Interior Design (also known as Interio Architecture)
- ☐ Interior Decorating (aesthetic presentation)
- ☐ Graphic Design (develop, prepare communication for publication)
- ☐ Textile Design (fabric performance, look)
- ☐ Exhibition Design (installation displays)
- ☐ Design Education (secondary)
- ☐ Other (please specify)
- ☐ Design Education (tertiary)
- ☐ Fashion Design (develop apparel, accessories, footwear)
- ☐ TV, Film and Set Design (plan and manage)
- ☐ TV and FIlm Production
- ☐ Design Management (corporate, strategic planing, media and visual)
- ☐ Jewellery Design (all types for manufacture)
- ☐ Furniture Design (develop and prepare for manufacture)
- ☐ Retail store, shop, chain (any category)
- ☐ Multimedia / Web Design (digital publication)
- ☐ Communication, Advertising / Marketing
- ☐ Engineering and Mechanical (development, design, production)
- ☐ Telecommunications
- ☐ Publishing (Print and Digital)
- ☐ Not Stated

12. Design Specialisations (explicitly stated)

- [ ] Animation
- [ ] 2D
- [ ] 3D
- [ ] 3D Modelling
- [ ] Illustration
- [ ] Interface
- [ ] System
- [ ] Content Management
- [ ] Search Engine Optimization and Management (SEO/SEM)
- [ ] Other (please specify)
- [ ] e-Commerce
- [ ] Social Media
- [ ] Digital Production
- [ ] Film and TV Production
- [ ] Project management
- [ ] Research and Development
- [ ] Client or Customer Service and Management
- [ ] Not Stated

13. Website Design (explicitly stated)

- [ ] HTML
- [ ] XHTML
- [ ] XML
- [ ] CSS
- [ ] Content Management
- [ ] Moderate Programming Skills (JavaScrip, JQuery etc)
- [ ] Advanced Programming Skills (PHP, C++ etc)
- [ ] None Stated
- [ ] Other (please specify)

14. Adobe Creative Suite Skills (explicitly stated)

- [ ] All Creative Suite (CS)
- [ ] Photoshop
- [ ] Illustrator
- [ ] InDesign
- [ ] Dreamweaver
- [ ] Other (please specify)
- [ ] Flash
- [ ] After Effects
- [ ] Premier Pro
- [ ] Unnamed Graphics Software
- [ ] None Stated

15. Productivity Software Skills

- [ ] MAC skills
- [ ] PC skills
- [ ] Microsoft Office
- [ ] Office Management Software (MYOB, QuickBooks, Other)
- [ ] Database Management
- [ ] Specialist Software (Discipline or Field specific)
- [ ] CRM: Customer Relationship Management Software (ProHub CRM / Sage CRM / Other)
- [ ] Project Management
- [ ] Computer Aided Design Software (CAD / 3D)
- [ ] None Stated
- [ ] Other (please specify)

16. Communication Skills and Thinking

- [ ] Writing Skills
- [ ] Verbal Skills
- [ ] Communication Skills
- [ ] Creative Thinking / Creativity
- [ ] Design Thinking
- [ ] None Stated
- [ ] Other (please specify)

17. Responsibility and Expectations (Explicitly stated and all that apply)

- [ ] Innovate
- [ ] Manage/Coordinate/Lead ... Teams / Others
- [ ] Problem Solving
- [ ] Quality Assurance
- [ ] Supervision
- [ ] Other (please specify)
- [ ] Time Management
- [ ] Work Collaboratively
- [ ] Work Independently
- [ ] Work in Teams
- [ ] None Stated

18. Highest Qualification Required

- ◯ Postgraduate
- ◯ Tertiary
- ◯ Formal
- ◯ Secondary / School
- ◯ None Stated
- ◯ Other (please specify)

19. Experience

- ◯ 1-2 yrs
- ◯ 3-5 yrs
- ◯ 6-10 yrs
- ◯ 11-15 yrs
- ◯ Generic: "Experience Required"
- ◯ None Stated
- ◯ Other (please specify)

20. Thinking about this job listing, how is design used in relation to the business/organisation that is hiring for the position?

- ☐ Design is a verb - the business contributes to design process.
- ☐ Design is an adjective - the business doesn't do design, but is using design to describe and associate with the broader concept.
- ☐ Design is a noun - the business deals with a product.
- ☐ Other (please specify)

21. Issues, notes, problems with capturing this job listing using this codebook.

Appendix G

Study Three Sub-Classifications for 2013 – 2019

The following table (Table 68) displays the complete list of job 'sub-classifications' for Study 3: *Recruiting Design for 2013 and 2019* and the number of times they appeared in the timeframe.

Table 68

Job Sub-Classifications for 2013 – 2019

Sub-classification	2013	Sub-classification	2019
Accounts Officers/Clerks	1	Account & Relationship Management	1
Analysis & Reporting	1	Aged & Disability Support	2
Analysts	1	Agency Account Management	2
Architect	1	Air Conditioning & Refrigeration	1
Army	2	Biological & Biomedical Sciences	1
Automotive Engineering	1	Building Trades	1
Aviation Services	1	Childcare & Outside School Hours Care	3
Banking – Corporate & Institutional	1	Client & Sales Administration	1
Business Services & Corporate Advisory	1	Contracts Management	3
Consulting & General HR	1	Corporate Finance & Investment Banking	1
Engineering & Maintenance	3	Dental	1
Engineering-Hardware	1	Environment & Sustainability Consulting	1
Environmental, Earth & Geosciences	2	Environmental Engineering	1
Event Management	1	Financial Managers & Controllers	1
Industrial Engineering	1	Financial Planning	1
Internal Communications	1	Fundraising	1
Library Services & Information Management	1	Generalists - In-house	1
Management - Department/Assistant	3	Hair & Beauty Services	2
Management - Store	3	Health, Safety & Environment	1
Market Research & Analysis	2	Maintenance & Handyperson Services	1
Marketing Communication	2	Management & Change Consulting	1
Merchandisers	1	Management & Support	1
Mining operation	1	Management Accounting & Budgeting	1

Sub-classification	2013	Sub-classification	2019
Networks & Systems	1	Mining - Operations	1
Nursing - General Medical & Surgical	1	Mortgages	1
Oil & Gas - Engineering & Maintenance	5	New Business Development	6
Performing Arts	1	Occupational Health & Safety	2
Pickers & Packers	1	PA, EA & Secretarial	1
Planning & Scheduling	1	Painters & Sign Writers	1
Plant & Machinery Operators	1	Planning	1
Policy	1	Product Management & Development	4
Power Generation & Distribution	1	Receptionists	2
Printing & Publishing Services	1	Recruitment - Agency	1
Process Engineering	1	Strategy & Planning	1
Programming & Production	1	Student Services	1
Public Relations & Corporate Affairs	1	Teaching - Secondary	2
Purchasing, Procurement & Inventory	2	Teaching - Tertiary	1
Rail & Maritime Transport	1	Warehousing, Storage & Distribution	3
Records Management & Document Control	1		
Research & Fellowships	1		
Residential Leasing & Property Management	1		
Residential Sales	1		
Technical Writing	1		
Telecommunications	5		
Testing & Quality Assurance	2		
Trade Marketing	1		
Water & Waste Engineering	1		
Welders & Boilermakers	1		
Workers' Compensation	1		

Appendix H

Synthesis Mixed Method Joint Displays

Table 69, Table 70 and Table 71 support the information in Chapter 7: *Synthesis and Discussion.* The results for all three studies appear under their association with either Quantitative or Qualitative investigation concerning *Design Meaning*, *Design Communication* or *Design Thinking*, Creativity, Innovation, Teamwork and Communication. The third column, 'Convergence' merges these findings to answer the research questions.

Table 69

Joint Display for Design Meaning

Qualitative Investigation	Quantitative Investigation	Convergence
	***Design* Meaning**	
Design meaning theme, *Design Confusion*: the meaning of *Design* or *Design* related concepts that seem confusing or vague for people. Illustrative Quote: [I feel] "confusion - if someone says the word *Design* - it doesn't evoke any strong feelings one way or another."	In DS, nearly all word combinations and keywords used the word *Design*: for example, *Design Cognition*, *Design problem*, *Design activity Design process*, *Product Design*, *Conceptual Design*.	*Design* meaning theme, *Design Confusion*. In all three studies *Design* required a descriptive word to illustrate its value. The meaning of *Design* was not shared and caused confusion.
Design meaning theme, *Design Frustration*: feeling a sense of frustration that *Design* or *Design* related concepts are not acknowledged. Illustrative Quote: "The best *Design* is invisible. That's what frustrates me [people] still think *Design* is abstract - woo woo - with art and colours - "I am not a designer" it is like I am not an artist".	AMJ and HBR shared six of 20-word combination frequencies: business enterprise; management research; industrial management; personnel management; strategic planning; organizational effectiveness. Neither AMJ nor HBR shared word combinations with DS.	*Design* meaning theme, *Design Frustration* There was a sense of frustration amoung *Design* professionals that *Design* does not receive more acknowledgment. Common interests for AMJ and HBR are business enterprise; management research; industrial management; personnel management; strategic planning and organizational effectiveness. These common interests are not shared with DS or, perhaps, DS does not engage with the interests of management and business.

Qualitative Investigation	Quantitative Investigation	Convergence
Design meaning theme, *Design Ingenuity*: the unlimited possibilities and creative ability of human imagination.	The leading keyword for DS was *Design Cognition*, which was followed closely by *Design Process*, *Conceptual Design* and *Design Education* (equal second). AMJ shared three keywords with HBR but none with DS	*Design* meaning theme, *Design Ingenuity*
Illustrative Quote: "[I] thought *Design* was for designers - you had to be qualified; fashion or an architect [an] elitist type of label. [When] I found that I could use my own *Design* skills; I really stretched myself and it changed my life".	The leading *Design* keyword for AMJ and HBR was Product *Design*. Second for AMJ was *Experimental Design* and third *Web Design*. Second for HBR was *Design* and third *Web Design*.	The leading keyword for *Design* professionals was *Design Cognition* followed by *Design Process*, which indicates that *Design* professionals lean towards *Design Ingenuity* rather than specific titles such as *Experimental Design* or *Web Design*.
Design meaning theme, *Design Manifestation*: an outcome or realisation of something, real or imagined; a manifestation expressed. Illustrative Quote: "*Design* means somebody with creative sight can put forward their vision and manifest what's in their mind."	The only shared *Design* keyword for AMJ HBR and DS was *Product Design*.	*Design* meaning theme, *Design Manifestation*. Management, business and *Design* share a primary connection through *Product Design*, which is the manifestation of an idea. Thus, the meaning of *Design* in business is predominantly industrial.
	Design as a singular keyword had one occurrence in DS and six in HBR.	*Design* (as a singular keyword) was hardly recognised by DS (used once in 18 years). The keyword, *Design*, had more recognition in HBR with six occurrences but zero in AMJ.
Design meaning theme, *Design Translation*: ideas, views or things, translated and interpreted to enable shared understanding. Illustrative Quote: "To me, [*Design*] it's 'translation'. You want people to think or understand or do and you are needing to translate that into a language that they understand so that they are empowered to do it".	HBR and DS had eight shared design keywords: *Engineering Design*; *Product Design*; *Architectural Design*; *Design*; *Design Research*; *Industrial Design*; *Design Technology* and *Web Design*.	*Design* meaning theme, *Design Translation*. Industrialised *Design* fields that translate to business are: *Engineering Design*, *Product Design*, *Architectural Design*, *Design Research*, *Industrial Design*, *Design Technology* and *Web Design*.

Qualitative Investigation	Quantitative Investigation	Convergence
	Leading *Design* job classification: *Information & Communication Technology*. In 2013 (27%) and 2019 (24%). Second: *Engineering*. In 2013 (20%) and 2019 (21%). Third: *Design & Architecture*. 14% in 2013 and 10% in 2019.	The foremost classification for *Design* jobs in business, for 2019, was *Information & Communication Technology*. Second was Engineering and third, *Design & Architecture*
	30 job classifications for *Design* on *seek.com.au* Only one classification included *Design*: *Design & Architecture*, which listed 14% of jobs in 2013 and 10% jobs in 2019.	Only one of 30 job classifications used the word *Design*: *Design & Architecture*.
	First sub-classification, from 66 sub classifications of *Design* jobs was: *Civil/Structural Engineering* 7% in 2013 and 9% in 2019.	The leading sub-classification for 2013 and 2019 was *Civil/Structural Engineering*.
	Second sub-classification: *Developers / Programmers*: 2013 (6%); 2019 (5%).	There was no sub-classification for *Design*.
	Six sub-classifications using the word *Design* for both 2013 and 2019 jobs: *Fashion & Textile Design*; *Graphic Design*; *Industrial Design*; *Interior Design*; *Urban Design & Planning*; *Web & Interaction Design*	There were six job sub-classifications that incorporated the word *Design*: *Fashion & Textile Design*; *Graphic Design*; *Industrial Design*; *Interior Design*; *Urban, Design & Planning* or *Web & Interaction Design*.
	Other sub-classifications included: *Architects*, *Architectural Drafting*, *Architecture*. Engineering: *Building Services Engineer / Engineering*; *Civil/Structural Engineering*; *Electrical/Electronic Engineering*; *Engineering – Network*; *Engineering – Software*. *Engineering Drafting*; *Field Engineering*; *Mechanical Engineering*; *Mining - Engineering & Maintenance*; *Project Engineering* and *Systems Engineering*.	There were three job sub-classifications for Architecture: *Architects*, *Architectural Drafting*, or *Architecture*. There were 11 sub-classifications related to engineering positions: *Building Services Engineer / Engineering*; *Civil/Structural Engineering*; *Electrical/Electronic Engineering*; *Engineering – Network*; *Engineering – Software*; *Engineering Drafting*; *Field Engineering*; *Mechanical Engineering*; *Mining - Engineering & Maintenance*; *Project Engineering* and *Systems Engineering*.

Table 70

Joint Display for Design Communication

Qualitative Investigation	Quantitative Investigation	Convergence
	***Design* Communication**	
A person's spoken definition of *Design* was not necessarily a representation of their feelings towards it. A participant who said, "[Talk] about *Design*? It's an automatic switch-off - no immediate relevance" also said, "At work, I enjoy designing information packages".	AMJ showed *Design* in 0.6% titles and 5% of the abstracts. HBR, had *Design* in 1% of the titles and 11% abstracts. DS included *Design* in 79% of the titles and 96% abstracts.	A person's actions towards *Design* are not a representation of their feelings towards it. Talk about *Design* in general language communication was not always about *Design* specifically. There was a disproportionate gap in occurrences of *Design* in the article titles: AMJ and HBR had less than 1% of titles with *Design*, yet DS was nearly 80%. *Design* had a stronger, but still disproportionate, presence in the abstracts AMJ 5%, DS 96% and HBR 11%.
	The top word combinations for the publications: AMJ: *Organisational behaviour*. HBR: *Strategic Plan*. DS: *Design Process*.	The three journals had distinctive social groups with detailed standards. AMJ focus was *Organisational behaviour.* HBR was *Strategic Plan* and DS was *Design Process*. Overall, the journals had limited in-common communication. *Design* and business professionals appear to use different vocabularies.
Design, as a noun, dominated in job ads for both 2013 (74%) and 2019 (69%). "Liaising with clients to develop *Design* briefs in accordance with cost plans" (Job ad, 2019). *Design*, as a verb, was present in 26% of the job ads in 2013 and 31% in 2019. "you will work on all phases of the *Design* development to meet seasonal timelines" (Job ad, 2019).		*Design* in job ads was largely communicated as a noun. There was increasing interest in *Design Responsibilities,* in 2019, which refers to *Design* as a verb.

Qualitative Investigation	Quantitative Investigation	Convergence
Design Responsibilities in job ads increased from 26% in 2013 to 31% in 2019.		
	AMJ had 10,583 keywords for the 18-year period; DS had 2,456 and HBR had 18,127. Of these, AMJ had 16 occurrences of *Design* keywords, DS had 1,419 and HBR had 66.	There was a large disparity in the use of *Design* keywords in published articles; AMJ 0.1%, DS 58% and HBR 0.4%.
	The words '*Design* and business' together did not appear in any titles for AMJ, once for DS and twice for HBR.	The 'partnership' of *Design* and business was not recognised in any of the professional publications studied.
	15,000 jobs ads for *Design* in 2013. 19,000 job ads for *Design* in 2019. In 2013, *Design* or designer was in 27% of job ads titles and 24% for 2019. In 2013, 69% of the jobs used the words *Design*, designer, designing or designed in the body only. In 2019 the number was 75%. In 2013, there was no mention of *Design* in 3% of job ads. In 2019 there was no mention in 2%.	The number of *Design* job opportunities in 2019 was 19,000, an increase of 6,000 jobs since 2013. In 2019, 2% of the jobs under *Design* had no mention of *Design*. The large number of jobs listed under *Design* was not reflected in the use of *Design* in the job titles. In 2019, *Design* or Designer appeared in 24% of job titles. As with Study Two abstracts, the body of the job ads had a higher presence of *Design* (75% in 2019).
	In 2013, 80% of the jobs offered Full-Time positions and in 2019 the percentage increased to 84%. The most significant number of job ads was Sydney for 2013 and 2019. Just six jobs were separating Sydney and Melbourne in 2013 but 35 in 2019.	More than 80% of jobs requested full-time work. In 2019, the majority of *Design* job listings came from Sydney. In Sydney, the leading job classification order was *Information & Communication Technology*, then *Design & Architecture* and third, *Engineering*.

Table 71

Joint Display Design Thinking, Creativity, Innovation, Teamwork

Qualitative Investigation	Quantitative Investigation	Convergence
***Design Thinking*, Creativity, Innovation, Teamwork and Communication**		
A majority of the participants were either unsure or had never heard of *Design Thinking*. Illustrative Quote: "No. Well, I might have, but I have forgotten if I have. *Design thinking*? Um …no I'm sorry".		A majority of the participants were either unsure or had never heard of *Design Thinking*.
The professionals working in *Design* were most familiar with *Design Thinking*. Illustrative Quote: "It's not common I don't think. Unless you are in a very certain type of workplace or like a certain environment, but it's … something I feel is going to become more common". Illustrative Quote: "I do use it. Partly because of just the corporate world and that's a term that people love. *Design Thinking*, it makes it sound like, it's the new 'innovation' in my mind".		The professionals working in *Design* were most familiar with *Design Thinking*. It seemed that large organisations might expect *Design Thinking*, but smaller businesses could be less familiar with the concept.
AMJ editors endorsed *Design Thinking* in 2015, but the topic did not appear in subsequent AMJ articles to December 2017.	The keyword, *Design Thinking,* occurred nine times in DS; once in HBR and zero in AMJ	DS published the keyword *Design Thinking* nine times in 18 years compared to 77 instances of *Design Cognition*. AMJ had zero incidences of the keyword *Design Thinking* or *Design Cognition*. HBR had one instance of the keyword *Design Thinking* but none of *Design Cognition*. There was no evident response, by authors, to the 2015 AMJ editorial endorsement of *Design Thinking*.

Qualitative Investigation	Quantitative Investigation	Convergence
Human-centred Design was associated with *Design Thinking* in the job ads.	*Design Thinking* appeared in one job ad for 2013 and six jobs in 2019. Human-centred Design first appeared in three job ads for 2019. (0% in 2013).	*Human-centred Design* emerged in association with *Design Thinking*, although it did not appear in 2013 (0%) it was present in three job ads for 2019.
Most of the participants seemed more comfortable defining creativity than any of the other terms. Illustrative Quote: "I think naturally every human being on the planet is creative So, when someone says, "I am not creative" it's like well, why, by what rules?".	The keyword creativity barely reached 1% of AMJ, 3% of DS and 1% of HBR There were 15 unique keywords for creativity across AMJ, DS and HBR. Creativity appeared in 27 (8%) job ads for 2013 and 20 (6%) job ads for 2019.	Most of the participants seemed more comfortable defining creativity than any of the other terms.
Some participants had no meaning for innovation. Professionals in Engineering and Marketing saw innovation as a procedural strategy. Illustrative Quote: "[In] engineering *Design* [a] vast majority of innovation [is] business processes, or organisational processes and procedures; attempts to make things more efficient".	Innovation was not present in any job listings for 2013 (0%) but it was present in 22 jobs for 2019 (7%).	Creativity was recognised in more job ads in 2013 than innovation. The presence of innovation grew 7% in 2019 job ads and creativity dropped 1%.
The professionals working in *Design* defined innovation as a corporate 'buzzword'. Illustrative Quote: "I am biased because one of my roles is in an 'innovation hub'. [I am] immune to the whole innovation world; business worlds are constructed around that word and how they are perceived and projected onto the community".	Keyword Innovation appeared as 1% of keywords for all AMJ, DS and HBR There were 33 unique keywords for innovation.	Innovation had double the keyword presence of creativity in AMJ and HBR but less than creativity in DS.
There was a small but noticeable increase in mentions of *Design teams* in 2019. A majority of participants recognised the significance of communication in teamwork.	Managing and working in teams was requested in at least 40% of the job ads in 2013 and 36% in 2019. Communication Skills (53%), plus verbal and written abilities, were an essential requirement for both years of the study.	Working in teams was included in 36% of 2019 job ad requirements. Also, in 2019, there was a 2% increase in the presence of *Design* Teams in job ads. A significant number of businesses requested communication skills in job

Qualitative Investigation	Quantitative Investigation	Convergence
		ads (53%) also written and verbal skills. Participants recognised the significance of communication in teamwork.

Appendix I

Discussion Summary Points from Joint Displays

The following sections are the integrated results for Study One, Study Two and Study Three identified in Appendix H joint displays. The results are reconfigured under the *Design* meaning themes from Study One: *Design Confusion*, *Design Frustration*, *Design Ingenuity*, *Design Manifestation* and *Design Translation*.

The following integrated results formed the foundation of the 10 key points and subsequent *Design-Gap Assumption Model.*

Design Confusion: is the meaning of *Design* or *Design* related concepts that seem confusing or vague for people.

- A person's actions towards *Design* were not a representation of their feelings towards it.
- Talk about *Design* in general language communication was not always about *Design* specifically. For example, a participant who said, "[Talk] about *Design*? It's an automatic switch-off - no immediate relevance" also said, "At work, I enjoy designing information packages."
- In all three studies, *Design* required a descriptive word to illustrate its value—for example, Web *Design*.
- The meaning of *Design* was not shared. A lack of shared meaning of *Design* creates confusion in professional settings.
- DS did not acknowledge *Design* as a single keyword.
- The keyword, *Design*, had more recognition in HBR with six occurrences but zero in AMJ.
- There was a large disparity in the use of *Design* keywords in published articles; AMJ 0.1%, DS 58% and HBR 0.4%.
- There was a disproportionate gap in occurrences of *Design* in the article titles: AMJ and HBR had less than 1% of titles with *Design*, yet DS was nearly 80%.

- *Design* had a more substantial, but still disproportionate, presence in the abstracts AMJ 5%, DS 96% and HBR 11%.
- The large number of jobs listed under *Design* was not reflected in the use of *Design* in job titles.
- In 2019, *Design* or designer appeared in 24% of job titles.
- As with Study Two abstracts, the body of the job ads had a higher presence of *Design* (75% in 2019).

Design Frustration: is feeling a sense of frustration that *Design* or *Design-related* concepts are not acknowledged.

- There was a sense of frustration amoung the *Design* professionals that *Design* does not receive more acknowledgment from business.
- Management and business have common interests such as business enterprise; management research; industrial management; personnel management; strategic planning and organizational effectiveness.
- The common interests of AMJ and HBR are not shared with professional *Design* (DS) or, perhaps, professional *Design* does not engage with the interests of management and business.
- A majority of the participants in Study One were either unsure of or had never heard of *Design Thinking*.
- The professionals working in *Design* were most familiar with the meaning of *Design Thinking*.
- It seemed that large organisations might expect to use *Design Thinking*, but smaller businesses could be less familiar with the concept.
- DS published the keyword *Design Thinking* nine times in 18 years compared to 77 instances of *Design Cognition*.
- AMJ had zero incidences of the keyword *Design Thinking* or *Design Cognition*.
- HBR had one instance of the keyword *Design Thinking* but none of *Design Cognition*.

- There was no evident response, by authors, to the 2015 AMJ editorial endorsement of *Design Thinking*.
- The 'partnership' of *Design* and business received limited recognition in any of the professional publications studied.
- *Human-centred Design* emerged in association with *Design Thinking*, although it did not appear in 2013 (0%) it was present in three job ads for 2019.

Design Ingenuity: is the unlimited possibilities and creative ability of the human imagination.

- The top keyword for *Design* professionals was *Design Cognition* followed by *Design Process*, which indicates that *Design* professionals lean towards *Design* ingenuity rather than specific titles such as *Experimental Design* or *Web Design*.
- Most of the participants seemed more comfortable defining creativity than any of the other terms.
- Innovation had double the keyword presence of creativity in AMJ and HBR but less than creativity in DS.
- Creativity was recognised in more job ads in 2013 than innovation.
- The presence of innovation grew 7% in 2019 job ads and creativity dropped 1%.

Design Manifestation: is an outcome or realisation of something, real or imagined; a manifestation expressed.

- Management, business and *Design* share a primary connection through *Product Design*, which is the manifestation of an idea. Thus, the meaning of *Design* in business is predominantly industrial.
- The number of *Design* job opportunities in 2019 was 19,000, an increase of 6,000 jobs since 2013.
- In 2019, 2% of the jobs under *Design* had no mention of *Design*.
- More than 80% of jobs requested full-time work.

- Only one of 30 pre-determined job classifications used the word *Design*: *Design & Architecture*.
- The main classification for *Design* jobs in business, for 2019, was *Information & Communication Technology*; then *Engineering* and third, *Design & Architecture.*
- In 2019, the majority of *Design* job listings came from Sydney.
- In Sydney, the leading job classification order was *Information & Communication Technology*, then *Design & Architecture* and third, *Engineering*.
- The leading sub-classification for 2013 and 2019 was *Civil/Structural Engineering*.
- There were three job sub-classifications for *Architecture*: *Architect*; *Architectural Drafting* or *Architecture*.
- Six job sub-classifications incorporated the word *Design*: *Fashion & Textile Design*; *Graphic Design*; *Industrial Design*; *Interior Design*; *Urban*, *Design & Planning* or *Web & Interaction Design*.
- There were no job sub-classifications for *Design*.
- There were 11 sub-classifications related to engineering positions: Building Services Engineer/ Engineering Civil/ Structural Engineering; Electrical/ Electronic Engineering; Engineering–Network; Engineering–Software; Engineering Drafting; Field Engineering; Mechanical Engineering; Mining- Engineering & Maintenance; Project Engineering or Systems Engineering.

Design Translation: is ideas, views or things, translated and interpreted to enable shared understanding.

- The industrialised *Design* fields that translated to business were *Engineering Design*, *Product Design*, *Architectural Design*, *Design Research*, *Industrial Design*, *Design Technology* and *Web Design*.
- The three journals had distinctive social groups with detailed standards.
- AMJ focus was *Organisational behaviour*. HBR was *Strategic Plan* and DS was *Design Process*. Overall, the journals had limited in-common communication.
- *Design* and business professionals appear to use different vocabularies.
- *Design* in job ads appeared predominantly as a noun.
- There was increasing interest in *Design Responsibilities*, in 2019, which refers to *Design* as a verb.
- Working in teams appeared in 36% of 2019 job ad requirements.
- In 2019, there was a 2% increase in the presence of *Design Teams* in job ads.
- A significant number of businesses requested communication skills in job ads (53%) sometimes separately to written and verbal skill requirements.
- A majority of participants recognised the significance of communication in teamwork.

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