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NEW ORGANISTIONAL LEADERSHIP CAPABILITIES: TRANSITIONAL ENGINEER THE NEW DESIGNER?

Cara WRIGLEY* and Sam BUCOLO

Queensland University of Technology

Traditionally, design has been centred within the manufacturing and production areas of companies and or as a styling afterthought. Increasingly, design is viewed as a vital and important strategic business resource (Dell'Era, Marchesi & Verganti, 2010) and consequently companies worldwide look to design to help them innovate, differentiate and compete in the global marketplace. The role of the professional designer is evolving to a point where they are needed to work beyond being a specialist in the manufacturing and aesthetics of an artefact (Wrigley & Bucolo, 2011). This paper challenges the values held by academics and industry regarding the traditional role of designers in business. It investigates the emerging transitional engineering framework and puts forward a proposal for the next generation designer in the future era of design. Questions surrounding how designers will develop these new skills and how the Authors' new framework of design led innovation can contribute to the future of design will be presented. This research is needed to better equip future designers to have a more central role in business.

Keywords:; Design Integration, Design Facilitation.

INTRODUCTION

Design is a vital and important strategic business resource that contributes to innovation (Dell'Era, Marchesi & Verganti, 2010), resulting in many companies worldwide look to design to help them innovate, differentiate and compete in the global marketplace. They do this by seeking design benefits such as increased quality of goods and services, improved production flexibility and reduced material costs (Cox, 2005).

The value of design is evident through a different way of thinking, doing, and tackling problems from outside the box. In practice, design is seen as the key to greater productivity and results in higher-value products and services, better processes, more effective marketing, simpler structures or better use of people's skills. Design is more than a niche market luxury. It is the most persuasive priority for solving problems, ensuring long-term business sustainability and gaining competitive advantages.

Understanding the historical development of the design profession is important for the context of this paper. For example, William Morris in his time would consider a designer an artist (Gorman, 2003), someone who is experienced in their craft through materials and handmade techniques. However over time, advancements in technology have enabled

* *Cara Wrigley:* School of Design | Queensland University of Technology
George Street | Brisbane 4001 | Australia
e-mail: cara.wrigley@qut.edu.au

mass-production and engendered designers as specialists in manufacturing, ergonomics and aesthetics. Designers were then often used as a late stage add-on to make products or ideas attractive to customers. In the present day however, it takes more than new technology for a design to be truly innovative. Designers are now being brought into the front end of the design process, at the stage where they can create products and services to successfully meet the customer's wants and desires (Brown, 2009).

To successfully profit from innovation, firms need to excel in technology development and product innovation but also in business modelling and business model innovation (Teece, 2010). Chesbrough (2010) argues that a mediocre technology pursued with a great business model may be more valuable than a great technology exploited via a mediocre business model (Chesbrough, 2010). Designers, therefore, need to learn how to transition between designing products and designing business models in order to engage in the new frontier of design.

THE MISSING LINK IN DESIGN AND BUSINESS

Martin (2007) asks why design and business can't be friends? He states that the reliability drive of business versus the validity focus of design creates tension. The conflict between reliability and validity plays out in the relationship between the two. Martin (2009) also suggests the way to get along is to: appreciate the legitimate differences, empathise, seek to communicate on each other's terms, use tools both sides are familiar with and change comfort zones. Moore (1999) builds upon this by addressing the diffusion of innovations and argues there is a chasm between the early adopters of the product (the technology enthusiasts and visionaries) and the early majority (the pragmatists). Moore (1999) explains that visionaries and pragmatists have very different expectations, and he attempts to explore those differences and suggest techniques to successfully cross the *"chasm",* including choosing a target market, understanding the whole product concept, positioning the product, building a marketing strategy and choosing the most appropriate distribution channel and pricing. The future of design lies in the coupling of project and business levels in a holistic approach to all products, services and above all experiences. This correlates with broader research trends that indicate design is moving away from a product centric approach and towards a method centred on business model innovation.

DESIGNING BUSINESS MODELS

In existing literature, the *'business model'* concept has been defined and referred to in many ways; as a statement, a description, a representation, an architecture, a conceptual tool or model, a structural template, or a method (Amit, Zott, & Massa, 2010). Thus, there is no consistent definition of what a business model is. However, literature describes key components of a business model as highlighting the notion of value (value stream, value proposition), monetary and financial aspects, and aspects related to a firm's exchange relationships (e.g. delivery channels) and competencies and activities (Chesbrough, 2006; Teece, 2010; Margretta 2002; Zott & Amit, 2010). Therefore it can be agreed that the notion of value is central to any business model (Teece, 2010).

Nowadays, the term *'business model'* is ubiquitous and almost central to today's management practices (Margretta, 2002; Johnson, Christensen & Kagermann, 2008). Although business models have always existed, the conceptual business model has been of increasing interest to practitioners and academics alike since the mid 1990's. All businesses either explicitly or implicitly employ a particular business model that describes the value creation, delivery, and capture mechanisms (Teece, 2010). Osterwalder and Pigneur (2010) provide an illustration that effectively summarises this theory and they refer to it as the business model canvas (Figure 1).

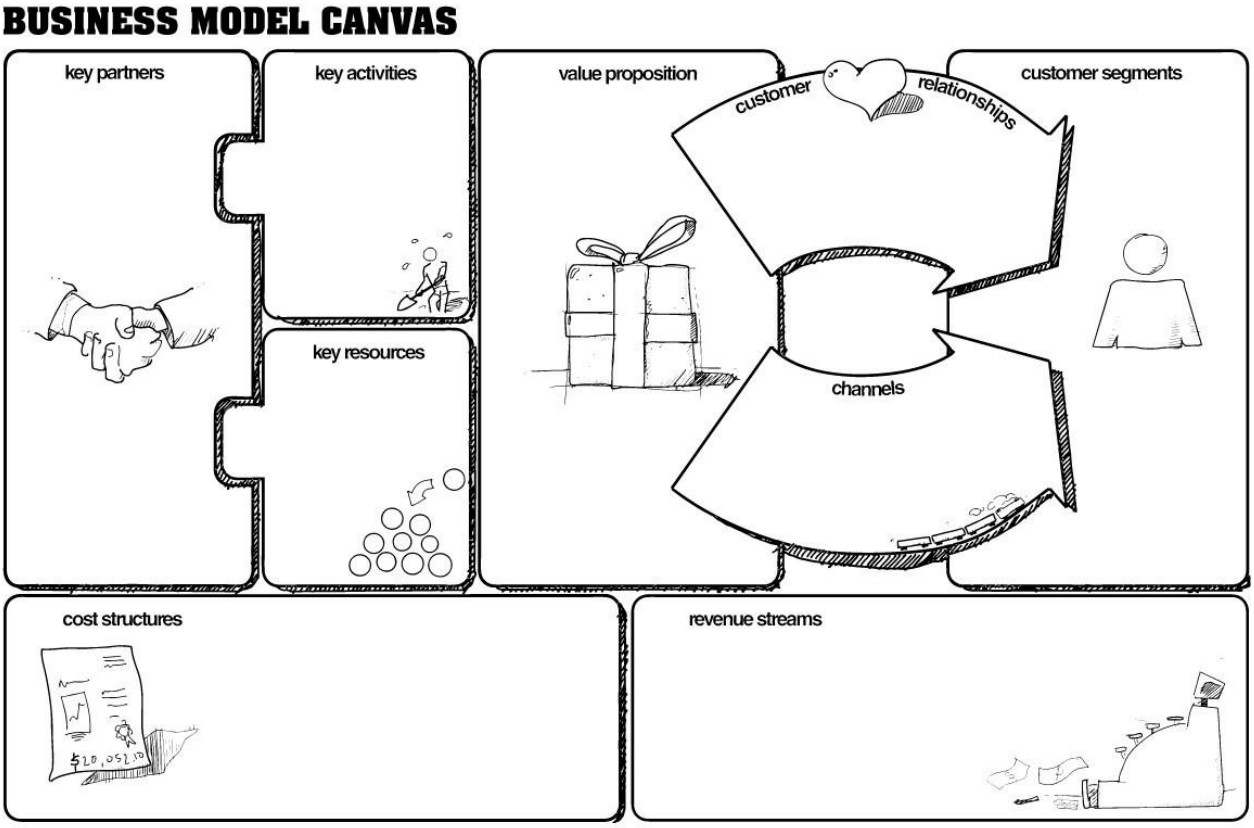

Figure 1 – Business Model Canvas (Osterwalder & Pigneur, 2010)

In order to create novel business models, design prototyping is imperative. When prototyping, the focus is on the iterative learning and exploration of new business model options, rather than testing pre-defined hypotheses. Design and design led innovation may significantly enhance a firm's capability in exploring and prototyping innovative business model options without restricting the firm to a set of pre-defined alternative solutions. Design enables business model innovation to make new discoveries by constructing alternative futures. Further, business prototypes and artefacts in different forms and levels of abstraction may enable business model "designers" to toggle back and forth between the real and abstract world and explore radically new business model options.

New designs have to fit into the competencies of a company; they must fit the launch schedule, marketing brief, manufacturing bill and funding model. Any new design that does not take each of these factors into account faces many barriers to market. Norman (2010) claims that the innovators job is not over until all of these barriers have been taken into account so that the entire system will work smoothly. He states that "innovation is a systems issue; it is not about product or process, but the entire system" (Norman, 2010:40). Innovation is a very complex topic, thoroughly discussed in academia, which is not something most designers in practice follow, highlighting the research-practice gap espoused by Norman (2010), further detailed in this paper.

The business model constitutes multiple value creation processes, which is partly branding, service model, funding, distribution and activities. Norman (2004) states that emotion is fundamental to all human behaviour and urges that it be infused into every aspect of the design process, but what about infusing it in every aspect of the business model? How can design and emotion be transformed into a business capability, not just a product capability?

DESIGNING PRODUCTS TO DESIGNING BUSINESS MODELS

In order to make the shift from designing products to designing business models many barriers must first be overcome. Among these barriers are language, facilitation, and designing both sides of the business model. The project level and business level are two very different things that require very different skill sets. Yet the real opportunity for innovation is to design them together, for the simple reason that if you just employ design at the one level (the project level) a product will emerge disjointed from the rest of the business opportunity, holding no central value proposition.

In order to do so designers must first learn the language of business, they must also be familiar with all nine blocks of the business model canvas and the impact it can have on the overall design approach. They must have the ability to design around the organisational capabilities and barriers and to address the language impediment that designers encounter when conversing with businesses and their needs. The visual language of design can assist in this communication as well as the delivery of tangible outcomes and additionally be used as a tool to facilitate a conversation between the two parties. In business model literature, there are a variety of tools and frameworks used to describe and develop new business models (Zott & Amit, 2010); some of them do so successfully by creating visual representations infusing both the project and business levels of the organisation (Chesbrough, 2010; Osterwalder & Pigneur, 2010).

It is clear, that a new role is required in order to address both sides of the business model in conglomerate and that the primary function of this role is facilitation. This 'facilitator' needs to speak both languages along with the ability to unpack design expression whilst simultaneously working within the constraints of a business model. Designers are skilled at making various forms of prototypes and artefacts in both the real and the abstract world. Throughout the process of design, various tools help to create *'tangible'* representations of *observations, frameworks, imperatives (or ideas)* and *the final solution.* Design led innovation may significantly enhance existing tools used to create such representations of business models making the intangible tangible and helping to move back and forth between the abstract and real world.

To explore *'novel'* business models, firms need to first challenge their existing beliefs and assumptions; thus, prototyping is essential. As discussed above, design-led *'prototyping'* refers to unlocking a mindset, representing many future possibilities not just those a company plans to implement. It allows for more than one concept to be held abstractly at once, while bringing pieces down into the concrete as they are needed, this becomes more of a learning and exploration process that companies embark on. To explore the 'unknown' firms should not restrict themselves to a set of pre-defined alternative solutions. Design led innovation may facilitate the exploration of new business model options by moving far away from the concrete and real world (Figure 2) and prototype business model options in the abstract world first. A 'deep dive' into the abstract world to explore unknown alternative solutions is essential in the early stages of the prototyping process and design led innovation may facilitate this significantly. However, at some stage designers have to move back into the real world and engage in what the Authors' call *'experimentation'* and testing of predefined solutions.

To conceive and design novel business model value propositions, firms are required to envisage future options of value creation and capture. However, in novel and meaningful business model innovations value is not created internally by one single person, department, or even company. It is created within the ecosystem of different stakeholders (Adner, 2006). Especially in service industries value is co-created by a large number of stakeholders collaborating in a service system while developing tangible and intangible assets and resources to the value creation process. Furthermore, the 'meaning' of business models is

not delivered it is 'co-created'. Thus, designing novel business model propositions implies designing future 'co-creation' opportunities. Such opportunities may require interactions with various stakeholders – including customers and complementary partners. Design led innovation as a participatory and iterative process may facilitate this progression by proposing future value propositions to various stakeholders, communicating value through the co-creation processes and also prototyping in a collaborative manner and therefore mitigating risk for the company.

From a 'technology' and 'functional' world-view, problem solving moves from technological functions and solutions directly to observations. However, we propose that design led innovation will help to reframe the problems and propose business model *'propositions'* that *'mean'* value for the customer. Design led innovation may facilitate constant back and forth movement between the abstract and real world, across all dimensions of business models such as markets, pricing, delivery channels, resources, business relationships and so on. Design led innovation may start from the comprehension of subtle and unspoken dynamics in socio-cultural models and may result in proposing radically new meanings for how firms create and capture values (Verganti, 2010). Further, it may help to challenge the existing and dominant business models in industry by linking new technologies to new *'meanings'* with customers and partners. Thus, design led innovation may enable new entrants in mature markets to *'disrupt'* not just from a technology point of view but also from a business model standpoint.

THE DESIGN LED INNOVATION FRAMEWORK

In order to overcome the barriers in moving from a product to business model design approach, the design led innovation framework has been developed. The Authors' argue that the design led innovation framework is an effective model to facilitate business model innovation.

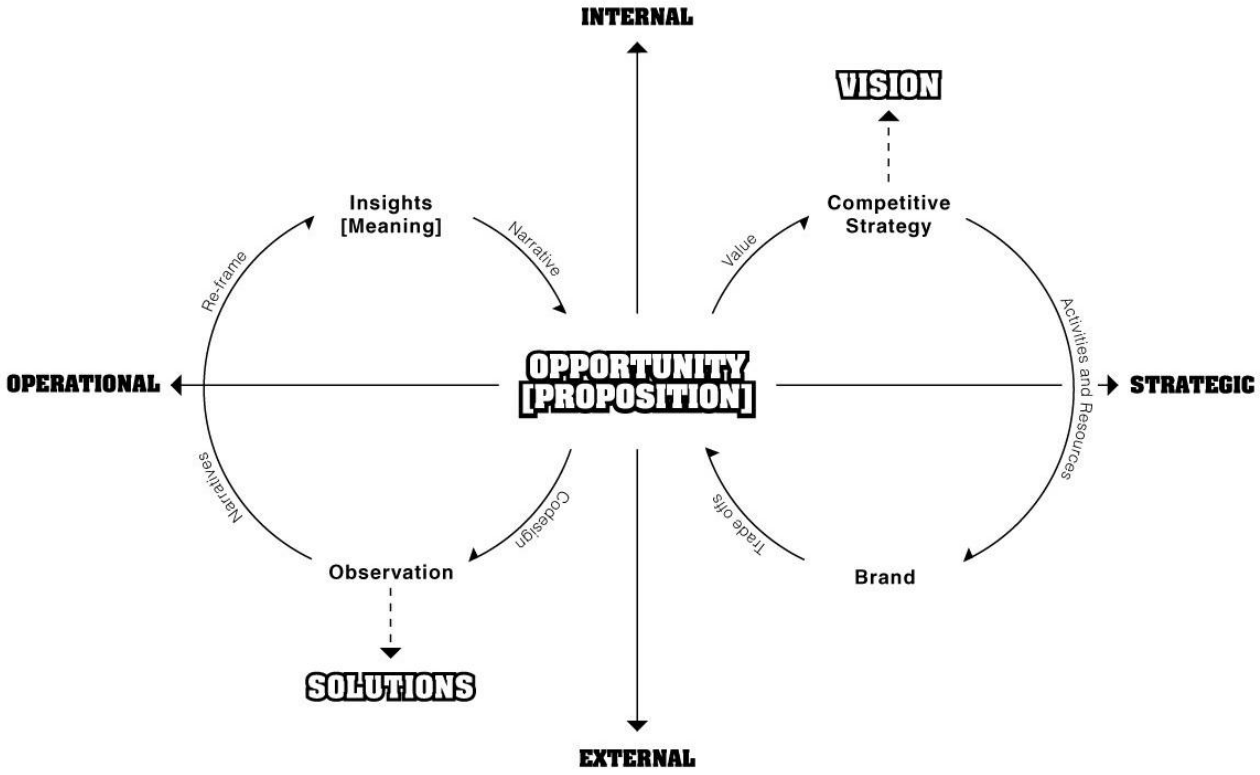

Figure 2 – The Design Led Framework (Bucolo & Matthews, 2011)

The proposed design led conceptual framework has been previously published by Bucolo and Matthews (2011) and was designed to assist companies who have the desire to grow through embedding the strategic value of design within their businesses (Figure 2). The framework illustrates that within any business a varying scale exists between operation and strategic activities. Activities that have an internal and external focus. Different departments within an organisation are assigned with these different activities and have specific targets, dependant on their functional role within the organisation. The model uses the term *'opportunity'* or *'proposition'* as the central goal, which unites all aspects of the business together. As the design concept matures, all aspects of the business are informed or have the ability to inform the opportunity, creating change and growth.

From the above design led innovation framework it has been identified that there is an emergent role in the translation from the abstract to the concrete as well as the project to the business level. But who should facilitate this role? In order to investigate this new role the Authors' looked to Norman's (2010) work on *'transitional engineering'*.

TRANSITIONAL ENGINEER

Norman (2010) proposes a grey area in-between research and practice; he refers to this as *'transitional engineering'*. This is a third discipline inserted in the middle to translate between the abstractions of research and the realities of practice. Described as *'transitional developers'* they act as translators, converting research into the language of business while also translating business into research. Bridging the gap from practice to research and research to practice. It has also been presented by Norman (2010) that the design research-practice gap can be overcome by better trained researchers, improved integration of design teams, and sharper attention to the needs of the product faction. This gap is vast and in order to bridge it, new knowledge, new skills and even a new type of practitioner, coined the *'Transitional Engineer'* is required.

Based on the theory provided by Norman (2010) the Authors' suggest similarities between the research-practice gap and the design-business gap. It is proposed that both could be overcome by using an intermediary translation team. This team would translate the knowledge into practical realisations that the team (business) can then develop and deploy. However, a limitation of Norman's (2010) research is that it is currently only a proposition, it is still unknown who will take on this new role or how they will do it?

Norman (2010) argues that once a product or service design direction has been established then human centred design (HDC) research can be employed with customers to enhance and improve it, not before hand. HCD designers get brought into a project too early in most cases as they understand the value proposition but at a project level only. The problem is complex and HCD does not factor in many business level variables needed. So who takes ownership of managing this holistic process? Designers need a different mindset at the start of a project than they have at the present time. They require different knowledge, processes and tools to crossover from the project level into the business level.

Building upon the framework established by Bucolo and Matthews (2011) the role of the Transitional Engineer is proposed through the Transitional Engineering Framework (Figure 3). As illustrated in figure 3, the two levels (project and business) are illustrated, representing the research and practice areas (Norman, 2010) as well as the design and business areas (Martin, 2009). This means moving an idea from the researcher (bottom left hand corner) through the research project (top left hand corner) to the user (bottom right hand corner) then through to strategy (top right hand corner) and that is difficult. It is this constant loop of conceptualisation back and forth between the parameters that creates real value for each stakeholder involved.

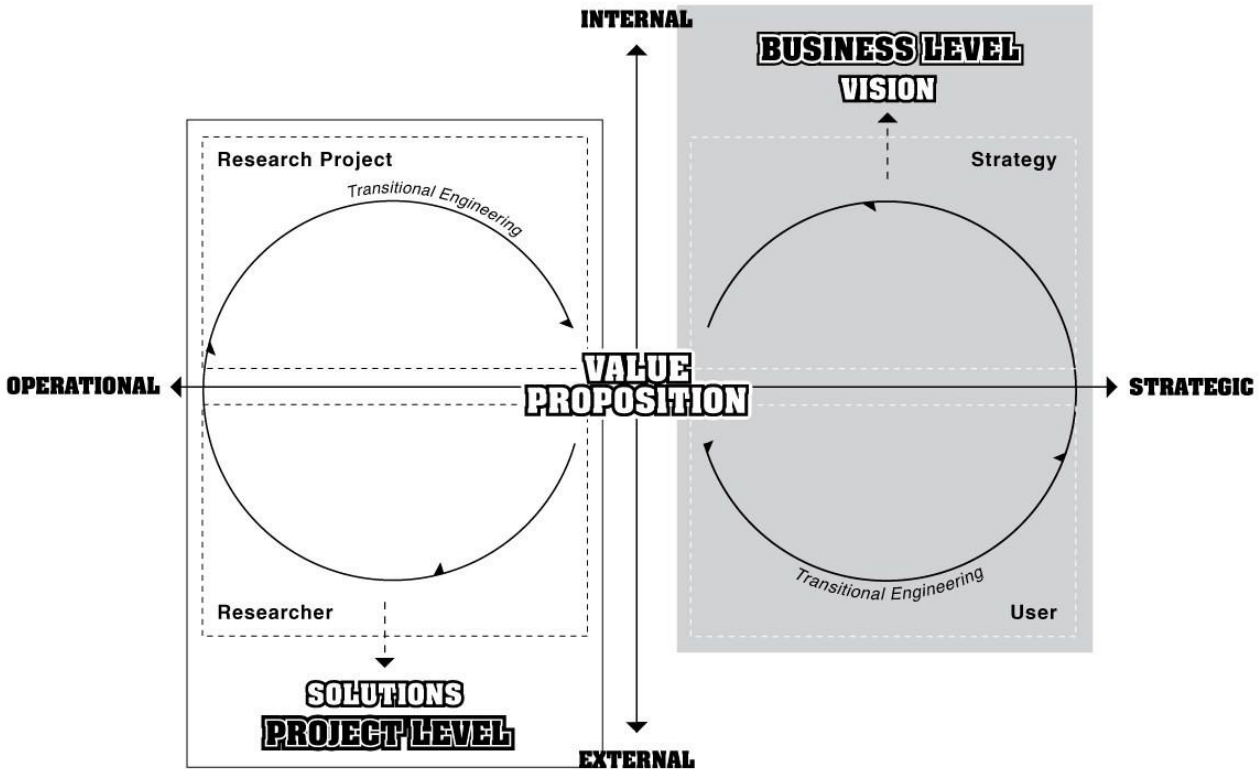

Figure 3 – Transitional Engineer Framework

Through exploring this framework in various settings, initial observations have revealed that ownership of the *"proposition"* is often unclear within an organization, and generally it requires a new role and responsibility. The term *design leader* or *design champion* is sometimes used to describe this responsibility, but the Authors' believe that it is more than just a leadership role that requires design capability, because *design leader* implies primarily an advocacy role. In addition to advocacy, the role also requires a deep understanding of operational requirements, business needs, and strategy and therefore requires something more like a *design interpreter*—someone who can influence and synthesize opportunities across the organization. Norman's (2010) notion of *"transitional engineering"*—a third discipline inserted in the middle of business and design to translate between the abstractions of research and the realities of practice—may provide a solution. Described as *transitional developers,* these people act as translators, converting research from the design field into the language of business while also translating business into design problems for designers to then address. This paper builds upon these insights and highlights the need for new organizational capability when adopting the design led innovation framework.

RESEARCH APPROACH

The motivation for this research originated from the Authors' experiences as design practitioners and educators who have, over recent years seen a significant transformation in the role of design in business. Key to this approach was the development of a framework to better understand the value of design in business, previously reported in Bucolo and Matthews (2011). The new role that designers must undertake and foster has been identified and it is proposed that this new role will be key in enabling the model to be adopted by business. This framework has been developed through a business and design lens. To do

this, the Authorss have explored this approach by working with students and businesses using Schön's (1983) reflection in action research model. As per Schön's 'Action Paradigm' (1983) the observations presented in this paper were captured by the Authors' while simultaneously practicing and immersing in data over a period of time. This involved engaging with companies across many sectors and sizes to assist them in becoming design-led, through the delivery of long-term design intervention approaches. Companies ranged in size from multinationals to SMEs and start-up enterprises. The outcome of this process was a revealing of new understandings of authentic business transformations and the role designers play within this process.

NEW ORGANISATIONAL LEADERSHIP CAPABILITIES

Norman (2010) started this conversation by asking who manages these new tasks of the transitional engineer? In relation to the design led innovation framework similar concerns are evident. Bridging the gap from product to business model design proposed by the Authors holds similar challenges. Based on Normans approach a third discipline needs to be added in-between the two disciplines of business and design. A role that facilitates and leverages the skills and capabilities of design yet also talks the language and understands the constraints of business. This is the proposition of this paper, based on Norman's (2010) transitional engineer approach, the Authors' propose a new name for such a new role (*Design Innovation Catalyst*), in order to separate and distinguish it amongst the roles designers have played previously throughout history. The "*Design Innovation Catalyst"* (Figure 4) translates and facilitates design observation, insight, meaning, and strategy into all facets of the company. The definition of this role is to continuously instigate, challenge and disrupt innovation internally and externally from within the company, whilst re-aligning and mapping these activities back to the strategy of the business.

Capabilities of this new *Design Innovation Catalyst* will include:

- Design visualisation skills to enable communication and implementation of the visual design led innovation tools and processes
- Business knowledge and understanding
- Conversant in the language of business, spanning all areas, levels and departments of a company
- Ability to challenge the status quo and procedural processes within an organisation
- Creative problem solving skills
- Capable of translating ideas from the abstract to the concrete, and through to strategy
- Ability to challenge the fundamental problems that are assumed by companies
- Adaptable and capable of converging and diverging quickly and seamlessly
- Understands business process and modelling concepts
- Speaks from a position of authority
- Has a vision for growth and a passion for the organisation
- Belief in the customer values
- Facilitator of disruptive change from a holistic view

In order to bridge the capabilities identified above new knowledge and skills that fall outside the traditional role of design or business education is needed. This research builds upon these insights and highlights the need for a new organisational capability such as a 'design innovation catalyst' to be engaged by businesses when adopting the design led

innovation framework. The Design Innovation Catalyst Framework is to be employed in an iterative cycle, engaging many different stakeholders in the process, tied together by the *'design innovation catalyst'* who is always measuring the concept against the central value proposition.

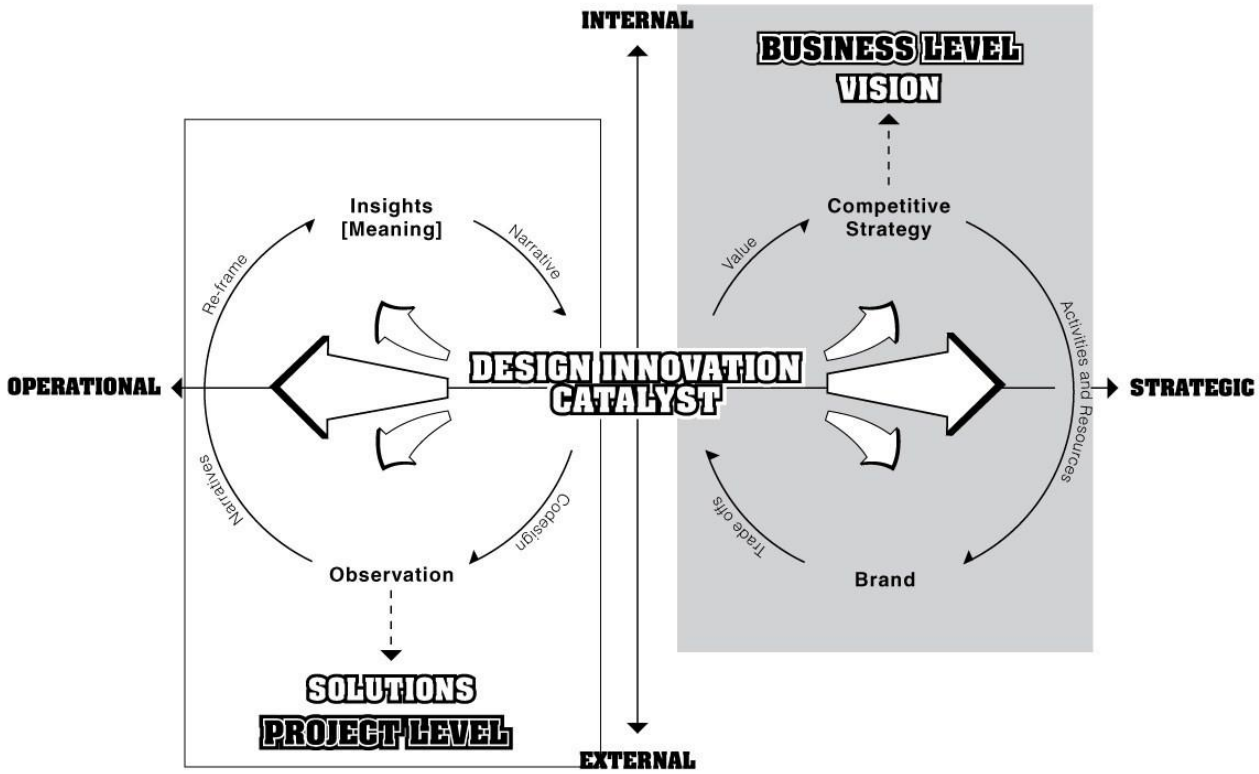

Figure 4 – Design Innovation Catalyst Framework

The authors believe that Universities are critical in meeting the needs to fill the organisational leadership gap in companies transitioning to design led businesses. Currently many new courses are being developed to assist in growing design thinking skills within business. These programs need to be expanded to focus on the gaps in organisational leadership identified in this paper. Universities are well positioned to take a leadership role in providing this new knowledge through practice based research activities. This approach to learning enables the awareness and capability gap to be addressed in one activity. The next step in this research study is to better understand how this approach can be achieved and scaled across organisations of varying sizes and capacities.

Working with companies during the initial exploration of this new framework has found that awareness surrounding the need for organisational leadership to successfully transition to a design led organisation, is low. Although there are early indications that the design thinking movement has highlighted the need to embed design capabilities within project teams, it is the Authors' opinion that these efforts are being diluted without addressing the identified gaps in organisational leadership. Efforts to address these organisational gaps and raise the level of awareness for change inside firms, is ongoing. This new role must be embedded within firms at the beginning of the design led journey and hiring a consultancy to fulfil these requirements will never work, as a cultural shift from within the company is imperative to its success.

SUMMARY

This paper presents a new approach to the traditional role of design within business and how educators might envisage creating such a professional. Questions were raised in regards to the transitional aspects of who could or should facilitate such a transformation within the design led framework. It was identified that design is not only about the aesthetics or functionality of products. Focussing on these will only encompass one variable of the business model and even although they are important, it is all aspects of a business model designed together that creates a real value proposition. The current gap in literature on this topic indicates that more research is needed in this area. Investigating this emerging field of research to better understand the future of design at the business level requires new tools, techniques, procedures, capabilities, languages and new knowledge. The future of the design profession lies in the ability to couple the product, service, technology and experience together, designing in a conglomerate underpinned by fundamental human emotion within the overarching business model.

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