From Valuing Design to Designing Value

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Abstract

This paper presents findings of an embedded action research project within a small to medium sized enterprise (SME). Through the implementation of design-led innovation processes, this research aims to identify the changes experienced in the participating company during a shift in the perspective of design from a product focus towards a strategic focus. Staff interviews and a reflective journal were used as methods to collect data from a range of design interventions that were facilitated throughout the engagement. A shift in perspective of design was evident through three cultural changes within the firm. First, the perceived outcome focus of design became increasingly long-term. Second, the value of design outcomes became less directed towards current projects, and more directed towards future possibilities. Finally, the perceived tangibility of design outcomes shifted from tangible to intangible. For example, design activities which produced customer insights, rather than product features, became seen as beneficial to the firm. These three components are proposed as cultural stepping stones which describe how a company transitions from an exclusively product-focused perspective and utilisation of design towards design as a company based process. Implications of this research provide considerations for designers who are attempting to facilitate a similar transformation within a business in the future.

Keywords: Product Design, Design as Strategy, Design-led Innovation

1   Introduction

Within the product development process, design has traditionally been used as a tool to inform the aesthetics and usability of a product. Increasingly, forward thinking companies are looking towards design to assist in strategic development and capturing new market value [1]. Design-led innovation (DLI) is a theoretical process that enables a firm to employ design at a strategic level by applying design thinking techniques within the context of the company's business model. However, transforming a company's utilisation of design from a traditional product focused activity to a 'whole firm' strategic focus is difficult, and requires a significant shift in how design is understood, utilised and valued as an activity, capability and cultural approach.

Few existing studies investigate the changes experienced at a cultural level as a company attempts to transform the way it understands, values and utilises design. This study hypothesises that a manufacturing business cannot integrate design at a strategic level while it considers design to be a solely stylistic or product-focused tool. Therefore, the research question addressed by this paper is: *What cultural changes are required to transform the perspective of design from a product-focused tool to a strategic process?*

Research conducted by a design innovation catalyst [2] while facilitating a design-led transformation within an Australian small to medium sized enterprise (SME) over an 11 month period is presented. By examining the range of approaches and interventions used by the catalyst, this study aims to identify the changes experienced by the participating company as the perspective of design is shifted from a product focus towards a strategic focus. Implications of this research are presented as considerations for future designers who are attempting to facilitate a cultural shift in perspective of design within a firm.

2   Literature Review
2.1   Danish Design Ladder
The Danish Design Ladder is a model that was developed by the Danish Design Council as a way to categorise the different levels of influence or 'integration' design can have within a business [3]. This model is highly relevant to the research presented in this study as it provides a foundational reference point to gauge the presence of design within the participating company. As explained by Bucolo and Matthews [4], design intervention programs, such as design-led innovation, aim to 'enable companies to shift their perspective on the value of design and therefore move up the ladder over time, from negligible attention to design, to design being critical to the company's success' (p. 4). In this way, the Danish Design Ladder framework allows independent companies to be compared on a simple yet reasonably undisputed scale in terms of their perspective and application of design. Research by Kretzschmar [3] has indicated that a correlation exists between high company performance and a higher ranking on the design ladder. There are four steps to the Danish Design Ladder: No Design, Design as Styling, Design as Process and Design as Strategy. These four steps are illustrated in Figure 1, and discussed in detail below.
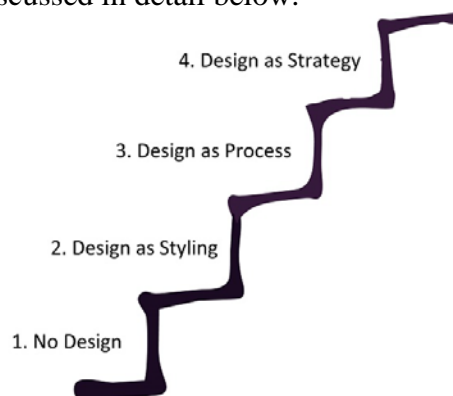

Figure 1 - Danish Design Ladder [3]

At the first step of the Danish Design Ladder, design plays a negligible role in the company; user or stakeholder perspectives do not influence the product development process. The second step, 'Design as Styling', sees a company utilise design as a means to develop the form, usability and aesthetics of a product. At this level, design outcomes can be easily measured as they are generally evident in new products or product features. The third step, 'Design as Process', is achieved when companies are able to able apply design as a methodology, rather than a tool, within projects. The design process can be adapted to the task

and involves a strong consideration of stakeholder requirements. At the final step of the ladder, 'Design as Strategy', design plays a pivotal role in the strategic development and management of the company. Upper management is intrinsically involved in the design process in order to create value for all aspects and stakeholders of the company [4].

The Danish Design Ladder is not without limitations, however. For instance, the model is generic and not industry-specific. Furthermore, it is not a framework for integrating design; the model only measures integration outcomes at an operational level. Currently, there is a substantial quantity of literature that examines and identifies the benefits of integrating design into a company; however there is not a great deal of literature which focuses on the journey to integration as a company progresses up the Danish Design Ladder. The utilisation of awareness activities, in conjunction with direct company interventions, is a typical way of assisting a firm to shift up the ladder to a higher level of design integration [3].

2.2 Design-led Innovation

As an integrative business process, design-led innovation (DLI) assists companies to develop a sustainable competitive advantage by realising the strategic value design can provide in a business environment [5]. By employing and integrating design at a holistic business level, a company can be considered 'design-led' or 'design integrated' [5]. DLI is a relatively new field of knowledge that has grown from a need to reposition and redefine the way design is valued and implemented in business. The fundamental principles of design have remained constant, despite the continuous evolution of its application in industry and business [2]. This consistency underlines Bucolo and Matthews' [4] design-led innovation framework, which builds upon Beckman and Barry's [6] design thinking framework and core design principles, such as cyclical iterations, prototyping and empathising. In DLI however, design is not driven exclusively by user needs or technology [7]. Instead, these core design principles have been extrapolated to strategy-level business applications, allowing a business's vision and value proposition to inform design decisions.

The conceptual Design-led Innovation Framework (Figure 2) illustrates an iterative process that can assist companies to explore, capture and realise the strategic value that design can bring to a business [4]. Key to this framework is the relationship between operational and strategic activities within a business, and the internal and external focus of these activities. These four elements make up the axes of the framework. The underlying opportunity or value proposition is positioned at the centre of these axes, and is used as the fundamental unifying theme to bring together all sections of a business [4].
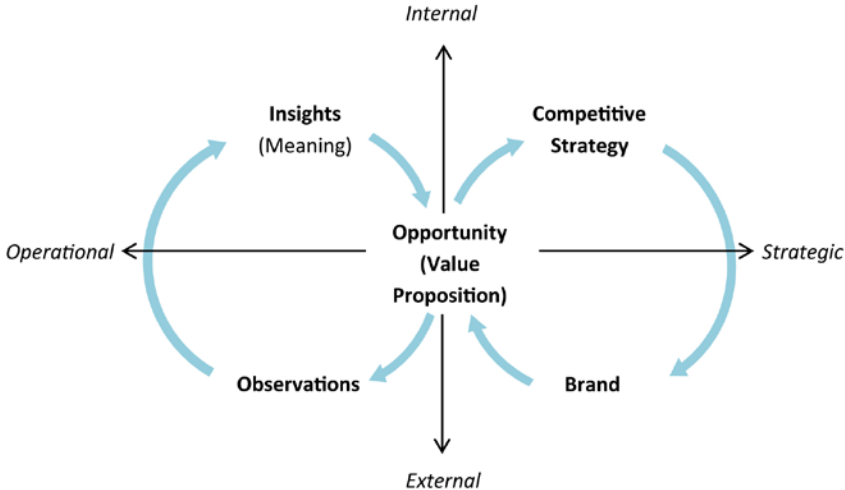

Figure 2 - Design-led Innovation Conceptual Framework [4]

The design innovation catalyst, first proposed in literature by Wrigley and Bucolo [8], is built upon Norman's [9] Translational Engineer concept and aims to answer the questions of who would work in the translational space between research and practice in order to facilitate a design-led innovation process within a company. The design innovation catalyst is an emerging role within a growing body of literature that challenges the responsibilities of a designer within a company. Wrigley [2] defines the role of the design innovation catalyst as a practitioner who "translates and facilitates design observation, insight, meaning and strategy, into all facets of the organisation" (p. 4). Additionally, the catalyst disrupts and challenges the internal and external innovation strategies of the firm from a position within the company. Although the catalyst retains an external or holistic view of the firm, it is necessary for the catalyst to be completely embedded within the operations of the firm in order to accurately understand, from a first person perspective, the cultural characteristics of the business.

3 Methodology

3.1 Research Design

An action research framework provided the core methodology for the 11 month longitudinal research engagement within the participating company. The researcher worked as a design innovation catalyst during this embedment in order to facilitate and demonstrate the uptake of design-led innovation processes. Action research combines change and learning within one process [10], making it highly applicable to the aims of this research. This iterative and cyclical process assists in bridging the gap between practice and theory by building on the natural process of planning, acting and critically reflecting on the results of the action [10]. In the case of this research, an action research methodology has allowed the researcher to facilitate the implementation of DLI theory within the participating company and concurrently reflect upon the challenges and outcomes encountered.

3.2 Data Collection

Within the action research methodology, two types of data collection methods have been utilised: semi-structured interviews with employees and an ongoing reflective journal. Interviews were conducted with employees at two points throughout the research engagement: after three months and again after nine months. The first round of semi-structured interviews involved 14 participants from various departments within the company, while the second round of interviews involved eight participants who were more heavily involved with the work of the catalyst. The discussions conducted in these interview rounds were focused on identifying changes in perceptions of design and DLI by reflecting on the range of activities and interventions facilitated by the catalyst.
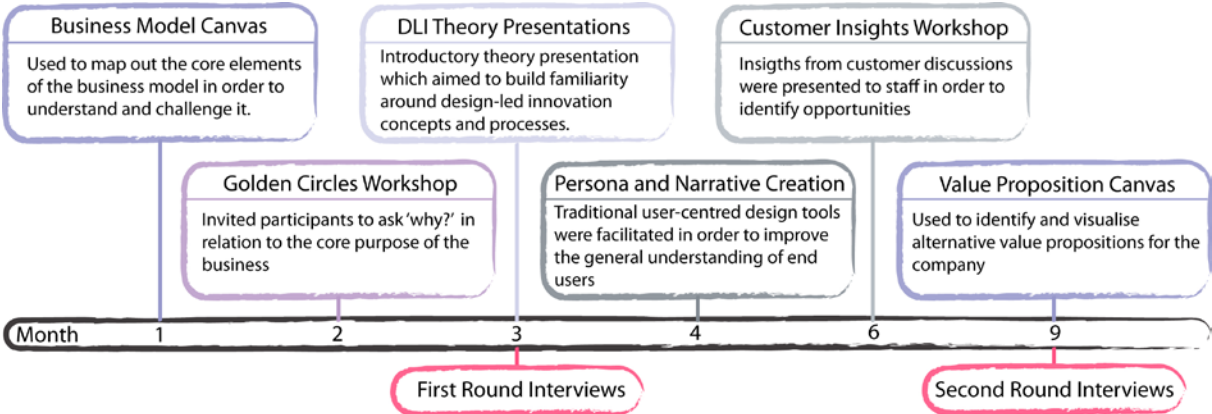

Figure 3 – Design Activities Timeline

Plack, et al., [11] recognised that "reflection gives meaning to experience; it turns experience into practice, links past and present experiences, and prepares the individual for future practice" (p. 199). The reflective journal provided a medium for recording and reflecting upon employee reactions to presentations, workshops, conversations and activities relating to the work of the catalyst and DLI. Reflective journal entries were made throughout the duration of the researcher's embedment within the company. Figure 3 provides a timeline and description of some of the important design activities that were facilitated by the catalyst throughout the research engagement, from which the data collections methods have reflected upon.

3.3   Participants

Fourteen participants from all departments of the participating company were selected for the first round of semi structured interviews and were grouped as Upper Management, Quality Control, Administration, Purchasing, Sales, Marketing, Research and Development, and Manufacturing. Most participants in each group were from managerial or supervisory roles within their departments. Eight of these original participants were interviewed in the second round. These eight participants represented each department of the company and were chosen due to their higher levels of involvement in the design-led.

3.4   Data Analysis

A thematic analysis was conducted on the two data sets in order to identify common and recurring themes. A thematic analysis is appropriate for the aims of this research as it does not pre-define the subject of the identified themes, but rather is directed by the requirements of the research and the input of the researcher [12]. Three themes emerged from the thematic analysis which describe the changes in perception of design that were experienced by the participating company. They are: Outcome Focus, Value Type and Tangibility.

4   Findings

A shift in perspective of design was identified within the participating company as a result of the research engagement. It was found that this shift was manifested through three separate, yet related changes in the cultural understanding of design outcomes. These cultural understandings are: the outcome focus of design, the value type of these outcomes and the tangibility of these outcomes. At the beginning of the engagement, employees placed a higher level of importance on product-level design, rather than strategic-level design, as they perceived it to be able to provide 'direct' value to the firm through tangible outcomes within a tight timeframe. In contrast, strategic-level design activities were perceived to produce long term, indirect and intangible outcomes, and consequently were not initially viewed as relevant to everyday work. Of course, not all employees maintained such a black-and-white perspective of these characteristics; however this was the common trend that emerged from the results of this research. The department of each participant is referenced after each quote to contextualise the employee's statement.

By the end of the design-led engagement, the applications, benefits and value of design were viewed from a new perspective within the firm. Participants no longer saw design as an activity which only applies to physical products: "*If you talk about design and only talk about product design, then I think you've lost it a little bit*" (Upper Management). The findings of this research describe the transition in thinking that was experienced throughout the research engagement towards understanding, valuing and utilising the strategic potential of design.

4.1 Short Term to Long Term Focus

A strong cultural trait identified within the firm was a tendency to value work with immediate and noticeable results over projects which have a longer term or strategic focus. For example, in response to a question about the ideal outcomes of the catalyst position, one participant noted in the first round of interviews: "*I'm looking at more direct value, rather than indirect; short term focus rather than long term focus. So let's hope at the end of the year, we have a process that's finished, complete and tangible*" (Upper Management). Although there were expectations that the work of the researcher as a catalyst would benefit the firm, these expectations were initially at a product-focused level and did not take into account strategic or business-level applications of design. The introduction and facilitation of tools such as the Business Model Canvas [13] and activities such as persona and narrative creation demonstrated a new potential for design principles to contribute to other areas of the business. However, shifting the cultural mindset of the firm away from a short term focus was hindered by a lack of understanding as to what a potential outcome would look like. "*At this stage probably not everybody realises what the outcomes can be*" (Sales). The use of case studies and clarifying the design-led process went some way towards enabling employees to envision and better appreciate long term outcomes such as a refined value proposition or company vision. "*It's looking at that vision. And while you haven't actually said, these are my recommendations, you've asked the questions to stimulate people to get them thinking in that direction*" (Sales).

The shift in perspective that was experienced within the company in regards to the outcome focus of design was evident in the way employees began to value long term projects: "*It's the big picture way of looking at things, we just don't have time. But for me it's like, well you don't have time because nobody ever looked at it. It's kind of like the chicken and the egg*" (R&D). As a result of the research engagement, the firm developed an appreciation for longer term design outcomes which required a holistic or 'big picture' perspective of the company, such as prototyping new business models.

4.2 Direct to Indirect Value

Within the participating company, a general aversion towards design activities, projects or theories that were perceived to provide 'indirect value' was found. Instead, employees tended to prefer work that would produce more immediate and beneficial results. One participant attributed this aversion to an innate difficulty to effectively measure the benefits of such influences: "*How can I impact the business if I start thinking differently? When can I start expecting sales figures to go up and salary? It's difficult to measure, difficult to track*" (R&D). One participant suggested that the existing culture of the firm embodied a selfish trait, and that this was the reason some employees did not acknowledge potential in perceived 'indirect value' activities: "*There's a 'what's in it for me' attitude. If there's no benefit for them, they're not going to want to change as quickly.*" (Quality Control). This explanation further supported the following quote by another participant: "*That [indirect approach to innovation] sounds awesome but how will that affect us directly. How can we implement that into what we are doing?*" (R&D).

In comparison to the traditional modes of design outputs that the company was familiar with, the new possibilities presented and demonstrated by the research were more ambiguous as to what the outcome would be. Regardless, tools which drew a clear relevance to the immediate task at hand were used as an effective way to develop an appreciation of indirect value outcomes. For example, insights from direct customer interviews were relevant to day-to-day tasks within the company, and also created value for the overall strategic direction of the firm.

In this way, a new appreciation for indirect value outcomes of design could be fostered. The following quote from one participant represents the new perspective of indirect design outcomes at the end of the research engagement: "*It [design] is the next step, about creating value that is not based on product or service, it's based on maybe a better process of dealing with us, or giving them the edge in terms of product, promotion, or channel to market*" (Upper Management).

4.3 Tangible to Intangible

The idea of 'tangibility' was found to influence many staff member's notion of importance in regards to tools, approaches and workshops that were trialled by the researcher. Tools that appeared to have no tangible outcome, such as business level development, were often considered irrelevant to everyday work. For example, in response to a question about the perceived benefit of strategic development, one participant stated: "*It's an under-resourced role, but it's never been focused on or seen as important, because it has a bit of an intangible output to it. There is no physical product*" (R&D). Participants acknowledged the potential benefits of tools with intangible outcomes, such as articulating and understanding the customer value chain, however it was seen as less important than the immediate task at hand: "*...the big picture stuff is gold. It's [we need you to be] getting back to direct value, safety, whatever it may be, to support some of the things we are doing now*" (Upper Management). This was reiterated by another participant who did not see the intangible work of the catalyst as directly valuable to their work or the company: "*So you'll have to deliver some side things to make it worthwhile*" (R&D).

Creating an understanding and encouraging the utilisation of the intangible outcomes of design was found to contribute significantly towards shifting the overall perception of design within the participating company. This shift was principally achieved by creating engagement in activities that did not produce a 'tangible' outcome, such as the 'Why?' workshop and the Value Proposition Canvas tool [13].

5 Discussion

5.1 Moving up the Design Ladder

In relation to the Danish Design Ladder (Figure 1), it can be seen that the shift in perception of design achieved with the participating company has progressed from a stylistic utilisation of design to a process-focused application. Furthermore, there is promising motivation to now progress further up the ladder in the future. For example, design principles such as collaboration, prototyping and empathising with stakeholders were being used at the end of the research project to articulate organisational structure maps, improve optimisation approaches and develop quality assurance procedures, rather than being exclusively used in product development. These new characteristics of the firm correspond to the third level of design integration: Design as Process (Kretzschmar, 2003). In the context of the participating company, this outcome was a significant shift in thinking considering the outlook of design at the start of the engagement was as an aesthetics and functionality development tool, with customers having little to no input into research and development activities. This initial perspective is comparable to the product focus of industrial design as described by Gemser and Leenders [14]. The results of this research suggest that the perception of design has changed in three ways in order to reach a process-level application of design. First, the outcome focus of design activities has shifted from short term to long term. Second, the perceived value of design has changed from direct to indirect. And finally, the tangibility of design outcomes has moved from tangible to intangible. Figure 4 illustrates these transitions.
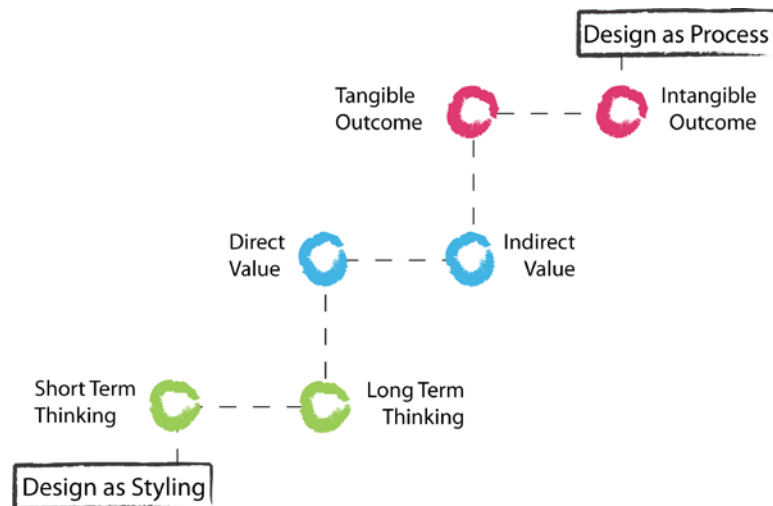
Figure 4 – Changes in Perceptions of Design

From these changes in perspective, it is proposed that there are several smaller steps or 'rungs' of the Danish Design Ladder [4] between 'Design as Styling', 'Design as Process' and 'Design as Strategy' that have been identified through this research. These smaller steps are presented as cultural stepping stones: the collective changes in perspective of design that need to be met before a company can successfully begin to progress from a product or 'styling' level of design integration. As shown in Figure 4, the four levels of design integration, as recognised by Kretzschmar [3], are related to the operational applications of design. It is proposed from the research presented in this thesis that a scale of the cultural awareness of design exists parallel to the operational elements of the original Danish Design Ladder (Figure 1). It is in this new meta-level of the ladder in which the cultural stepping stones come into influence.
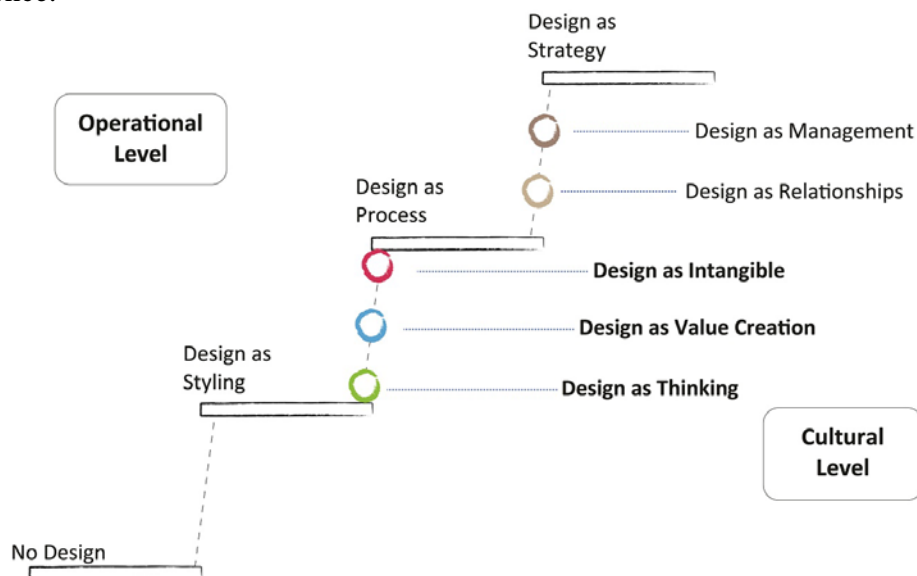

Figure 5 - Cultural Stepping Stones applied to the Danish Design Ladder

As shown in Figure 5, three cultural stepping stones have been proposed between the design integration levels of Styling and Process. These stepping stones are: 'Design as Thinking', 'Design as Value Creation' and 'Design as Intangible'. Additionally, projected stepping stones have been proposed in order for a company to utilise design at a strategic level. Each of the stepping stones presented in Figure 4 can be considered as the cultural imperatives of a manufacturing company that are needed to climb Kretzschmar's [3] Design Ladder. The

cultural elements of the proposed model are cumulative: a company must acquire, embed, and maintain each stepping stone in order to progress to the next operational level of design integration. However, it is important to note that since these stages are cultural or 'perspective' imperatives, reaching a stepping stone does not necessarily equate to observable operational changes within the business. Each stepping stone is discussed in detail below.

Design as Thinking - The first proposed cultural stepping stone that was achieved by the participating company is 'Design as Thinking'. At this stepping stone, design is perceived by the company to be a unique way to approach and solve problems. Through this 'designerly' way of thinking, employees begin to incorporate design principles, such as collaboration, experimentation and optimism, into the way they approach and solve problems [15].

Design as Value Creation - At the second proposed cultural stepping stone, the company culture recognises that design is a method of creating value, rather than a tool for inventing solutions. At this level of understanding, the cultural perception removes itself from the traditional tendency to expect an immediate and measurable outcome from the application of design processes. Instead, design is now acknowledged to create value for a particular stakeholder – customers, suppliers, the company itself – though short term outputs or long term outcomes. Cockton [16] describes a value-centred design approach as a shift in perspective from the product, via the user, to the context of use.

Design as Intangible - Building from the first and second cultural stepping stones, a company's culture can reach the third proposed level once it acknowledges that design outcomes can be intangible. In contrast to traditional design outcomes in the manufacturing industry, applying design at a holistic level with a business can produce outcomes that are not immediately observable or valuable [17]. Once a company's culture reaches this level of design awareness in conjunction with the two preceding cultural stepping stones, the shift in perception of design can be observed at an operational level through new applications of design principles within procedural elements of the firm - the 'Process' level of the Danish Design Ladder has been achieved.

Additional Projected Stepping Stones: Towards Design as Strategy - Although the participating company has not yet reached the fourth level of design integration by applying design at a strategic level, the potential for design to provide strategic value to the business has become apparent to employees. From the findings of this study, projected cultural stepping stones have been formed and proposed. The first projected stepping stone is 'Design as Relationships'. At this step, the company recognises design as a way to create value through meaningful relationships with stakeholders in the business's value chain. The second projected stepping stone is 'Design as Management'. Once the culture of a company understands the value design can provide from a managerial level, it is well on its way towards integrating design at a strategic level and becoming holistically design-led.

6   Implications and Summary

This research provides a range of implications for designers who are attempting to shift a company's perspective of design in order to integrate design at a strategic level. For example, time needs to be dedicated towards understanding the firm's current perception and application of design at the beginning of the project. This investment will allow the project to be launched from the company's existing level of design integration. Similar to creating rapport with employees, this understanding can be achieved by assimilating into the day-to-day culture of the firm. A key part of design-led innovation is the relationship and facilitation

between operational and strategic design. Relating operational and strategic elements of the firm back to the value proposition, as in the DLI Conceptual Framework, is only effective and beneficial when the value proposition is considered an important component of the business. For a company without prior exposure to strategic development processes, or when employees involved in the process are not concerned with upper management or holistic functions of the business, a clear link between the value proposition and project level work needs to be created.

It was hypothesised at the beginning of this study that design cannot be integrated at a strategic level while it is considered an exclusively stylistic or product focused-tool. Although the participating company did not reach a level of strategic design integration as a result of this research, their progression up the Danish Design Ladder model would suggest that the identified cultural changes are a prerequisite of this shift. Future research should examine and validate the projected stepping stones by continuing to work with the participating company or with another company at a similar stage of the journey towards becoming design-led.

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