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Creating new possibilities: Using design processes to overcome constraints

- Judy Matthews¹ and Sam Bucolo²
- ¹QUT Business School and ²School of Design,
 - Queensland University of Technology,
 - Brisbane,
 - Australia
- **Corresponding author:** Judy Matthews, School of Management, QUT Business School, Queensland University of Technology,
 - Brisbane, Australia, Q4001.
 - Email: jh.matthews@qut.edu.au

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Sub-theme 34:

Discovering Creativity in Necessity: Organizational Ingenuity under Institutional Constraints

- papers that examine organizational ingenuity by groups and teams;
- papers that examine organizational ingenuity in projects and temporary organizations;

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Creating new possibilities: Using design processes to overcome constraints

Sub-theme 34:

Discovering Creativity in Necessity: Organizational Ingenuity under Institutional Constraints

Abstract

This paper describes how a team from a large company, when faced with a challenge to develop new customers in fast growing international markets, carried out the exploration of the needs of new clients in the largely unexplored market space of a developing country. This team used design methods and processes to identify the latent needs of new customers in situations of major economic, geographical, cultural and financial constraints. This encapsulation of the life experiences of potential customers is used extensively in some new product development, but is largely novel to business practices and in processes of developing new services. This research links with the sub-theme of discovering creativity in necessity and highlights the potential benefits of design methodologies to create new possibilities for better accessibility of the company's products to new clients, with future implications for organizational strategy. The overall theme of Design for the Colloquium encourages exploration of the ways and means of developing new ideas for new business with better outcomes, using design concepts and design technologies.

Keywords: *ingenuity, design methods, creativity*

Introduction

Organisations apply strategic thinking and planning processes to chart and shape their business activities and performance (Eden & Akermann, 1998; Heracleous, 1998; Heracleous & Jacobs, 2008; Hodgkinson & Healey, 2008). Research has found that designers and their ways of working can assist organisations to achieve better business performance business (Lafly & Charan, 2008) beyond developing new products (UK Reports). While these processes are well known and established, what is not known is how organisations develop ways of developing creative solutions in highly competitive markets.

The purpose of this paper is to identify some of the processes that arise from situations using design methods with a view to identifying strategies for overcoming constraints to creativity in organisations. To a large extent organizational performance is understood to be a rational planned process but the successful companies move beyond the planned strategic approach to more imaginative possibilities often create powerful business products and services. Design methodologies and practices enable this possibility.

The research gap that is addressed is how firms use design methods to stimulate and create new business possibilities in markets with very distinct social and cultural contexts. This paper examines an example of one technology based company that has used the current deep knowledge and expertise constraints as a stimulus for looking at new ways of working in an unfamiliar context.

We seek to make a contribution to three areas of literature. First we identify an approach that builds on existing literature that describes the use of design methods for problem solving in situations of constraint. Second we suggest that abduction and design methodologies have particular potential for insights into new market developments in emerging economies. Finally we suggest that ingenuity and problem solving literature may benefit from the use of design methodologies. The contribution we are seeking to make is a better understanding of design methods and their potential contributions to new ways of working, and the processes and steps for taking up and implementing these new ideas.

The paper first presents the background, some previous relevant research and then summarises the research process and findings at this stage of the research process. Future research is suggested.

Background

Much of the previous research on ingenuity, or the process of applying ideas to solve problems or meet challenges, has been found in studies of creativity in organisations, often strongly focused on creativity at an individual level (George, 2007, Runco, 2004; Sternberg, 2006), with the exception of Hargadon & Becky (2006) who investigated collective creativity in professional service firms. Many authors have described creativity in organisations (Amabile, 1996; Zhu & Shalley, 2010) with some exception (Stokes, 2006) the majority of perspectives which use constraints as a stimulus for creativity are found in the design and

business literature. For example, Stokes (2006) quotes Csikzenmihalyi (1996) and Simonton (1999) and argues that “creativity occurs when someone does something new that is also useful, generative or influential”, where useful means solves a problem; generative where a new thing leads to other ideas and things; and influential: new things changes the way we look at, listen to, think about or do new things (Stokes, 2006:1).

In many organisations, creativity has a distinctive place, such as in developing new products and services, carrying out R&D, business turnaround processes. Over time rigidities form constraints and may limit possibilities for future approaches. Strategic thinking is often carried out within these confines. Firms that move outside such confines have applied design processes to imagine new possibilities, to create new directions and build new competencies for action. Organisational literature provides examples of some of these situations P&G (Lafly & Charan, 2008). Some firms employ design methodologies to develop new ways of delivering their products or services to the market or the community (Bessant & Maher, 2009; Brown, 2008; Kelley, 200: Lafley & Charan, 2008).

We present two areas that influenced this research: abductive research and design methods, that both influenced how constraints were used to create possibilities for new ways of working, in the context of a company which is a market leader.

First we describe abduction and its contribution to possibility generation

“Abduction is the process of forming an explanatory hypothesis. It is the only logical operation which introduces any new idea; for induction does nothing but determine a value, and deduction merely evolves the necessary consequences of a pure hypothesis. Deduction proves that something *must be*; Induction shows that something *actually is* operative; Abduction merely suggests that something *may be*” (Pierce, 1958: 171)

This paper uses an abductive approach which combines both inductive and deductive reasoning. Using an inductive approach builds on knowledge of research and a deductive approach suggests propositions for future research. “Synthesis is an abductive sensemaking process” (Kolko, 2010). Synthesis requires a designer to forge together seemingly unrelated issues through a process of selective pruning and visual organisation (Kolko, 2010: P18).

Abduction can be described as the argument which provides the best explanation: the hypothesis that makes most sense given the observed phenomenon or data and based on prior experience – inference of ‘best guess’...” (Abduction) allows for the creation of new

knowledge and insight the conclusions from an abductive argument might turn out to be false, even if the premises are true” (Kolko, 2010: 20).

Johnson-Laird (in Kolko 2005: 21) describes a four step process which leads to insight which only *seems* to appear instantly.

- The current problem solving strategy fails to yield a solution, given the existing constraints;
- There is a tacit consideration of the new constraints of the strategy;
- The constraints are relaxed (or changed) in a new way, thus broadening the problem space and allowing for further consideration.
- Many changes in constraints lead nowhere, but, with perseverance, a change may be made that leads at once to a solution of the problem” (J_L 2005).

Dew contends that “Abduction helps us in the face of ignorance and uncertainty” where abduction has three characteristics: plausibility, defeasibility, and presumption (Dew, 2007:29). For example, plausibility means that something seems to be true based on appearances and what’s plausible depends on the data we have to hand”; defeasible, means that the hypotheses are subject to further consideration, or modification if further evidence becomes available; and presumptive implies that future decision-making stages rely on these proposed assumptions and solutions. Designers often play with many different solutions but all possibilities are framed by how the problem was defined originally. Abduction used in strategy to explain the strategies of competitors, to design new business models, to revise beliefs about the environment and to find new market opportunities (Dew, 2007). Examples of the application of abductive thinking and the license to explore new possibilities. For example P&G’s Swiffer, a better solution for fast, non-water based cleaning of floors, was not an incremental improvement, but rather listened to the desires of customers and developed a new solution.

Design Methods

A diverse, interdisciplinary and cross organizational research team with six members was formed with expertise spanning innovation, design, management, marketing, sociology and health sciences and engaged in research for twelve months with a medical device firm. Three of the team are experienced industrial designers, two of whom had worked with multiple

organizations for extensive periods of time and one designer who had previous experience developing medical devices.

Data collection for this exploratory research was undertaken on location in two different countries, in multiple sites in urban and rural locations. Data collection, analysis and interpretation were carried out in five stages. Each stage involved the construction of new materials, generating new insights through active engagement by the research team, with the data from potential customers, their families and communities, and relevant stakeholders such as local diagnosticians. Further new insights were also developed through presentation of these findings to the executive team.

Different methods of analysis were used to develop the materials for discussion. Insight is a combination or the addition of problem-specific observations and personal and professional experience and hence includes both subjective and objective knowledge generated from the gathered data. Design synthesis can be understood as an abductive sensemaking process of manipulating, organizing, running and filtering data in context of design problem reframing; concept mapping and insight combination – prioritizing, judging and forging connections (Beckman & Barry, 2009). This approach is presented as the Design Cycle in Figure 1.

Each research stage is described within the context of the project case study. The stages, methodologies, technologies and outputs and the processes used to develop material for personas, storyboards and narratives can be understood as a number of stages and a summary of the process is presented in Table 1. An example of the storyboarding process is seen in Figure 2. Each stage of the research involves developing narratives of the potential clients, and narratives for the organisation. Each narrative can be a metaphor for the challenges, possibilities and framing for new ways of working. Bartel & Garud (2009) describe the use of narratives for organizational innovation. Stories are important to the design process. The stories collected during the field observation and interview process which were shaped during framing (Beckman & Barry 2009). Stories can create emotional connection with the challenges that potential customers face in benefitting from accessibility to the product/service.

Fraser describes 'three gears of design' "comprised of user understanding and empathy; concept visualization and strategic business design" (Fraser, 2008: 67-68) and proposes these steps lead to new ways of business development.

1. Reframe business wholly through the eyes of the user whole person not just what they do but how they feel about it and how their needs surrounding the activity link to other parts of their life in terms of other activities, other people and other cues to their needs.
2. Concept visualization through ideation and multiple-prototyping generating possibilities of meeting human needs in an imaginative way;
3. Align strategic concepts with a future reality, using Porter's activity system and leveraging from the existing system to a future system.

Such processes can be useful for taking learning from a project and portfolio organisational level to a central role in a company's strategy.

Main findings

New ideas for appropriate and potential service were developed and are being implemented by the company. The use of design methods to capture the experiences of potential customers and to present these visual and oral narratives as personal stories to the company also engaged an emotional connection for the company (Beckman & Barry, 2009).

The characteristics of the research team were to develop openness to new ideas and ways of working across the organisation and its multiple locations. Many stakeholders used the discussion to generate suggestions for new ways of working and new types of technology to assist increased accessibility and quality of services, with ready acceptance of creating possibilities for new ways of working. At a micro-level, selecting the players, building the team, creating collaborative engaged members is not addressed in this paper, and the detailed steps for these processes could be articulated. One limitation of this research is that the design research process was used with only one company, carried out in multiple sites, urban and rural in two large culturally diverse countries. There are limits to generalizing from this one case but we argue the nature of this approach may have application for stimulating ingenuity in other companies who are exploring possibilities in new markets.

Conclusions and Future Research

Ingenuity in a project team with the assistance of a research team has created new ideas for services in a science and technological product based organisation. The approach used in this case study has the potential to also create new possibilities for the larger organisation. The challenge now is to take these design process in strategic approach of the company. Other examples have occurred where the top leadership team has sponsored a new approach, such as in Apple and P& G. Successful organisations engage the CEO and Senior Leadership Team to support the experimentation of new ways of working and while this approval was provided for this experimental project, the challenge of taking this design methods approach from the project level as strategic thinking or strategic planning to company-wide approach is yet to be undertaken. Here we suggest that strategic thinking and strategic planning occur iteratively over time where there is a continual quest for novel and creative strategies that can be born in the minds of strategists or can emerge from the grassroots desirability and feasibility and plan for realisation (Heracleous, 1998, 486). Strategic thinking can be understood as double-loop learning (Heracleous, 1998) and strategy is often crafted through embodied metaphors (Heracleous & Jacobs, 2008) and design methods have also been applied successfully (Monnavarian, Farmani & Yajam, 2011).

Contributions

This paper articulates one approach to discovering creativity through the engagement of an external experienced designer (who had with extensive prior experience with the company) and a research team and the experimentation and implementation of research methods in developing narratives for new services. Through reflection on the internal working of a research project group and their engagement in developing new approaches, we have a clearer notion of design processes and their application to creating new possibilities for client access as well as some detailed processes of visual story-telling and narrative, and the possibilities for application of design processes at the strategic level of the company.

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Figure 1. Design Thinking Cycle.

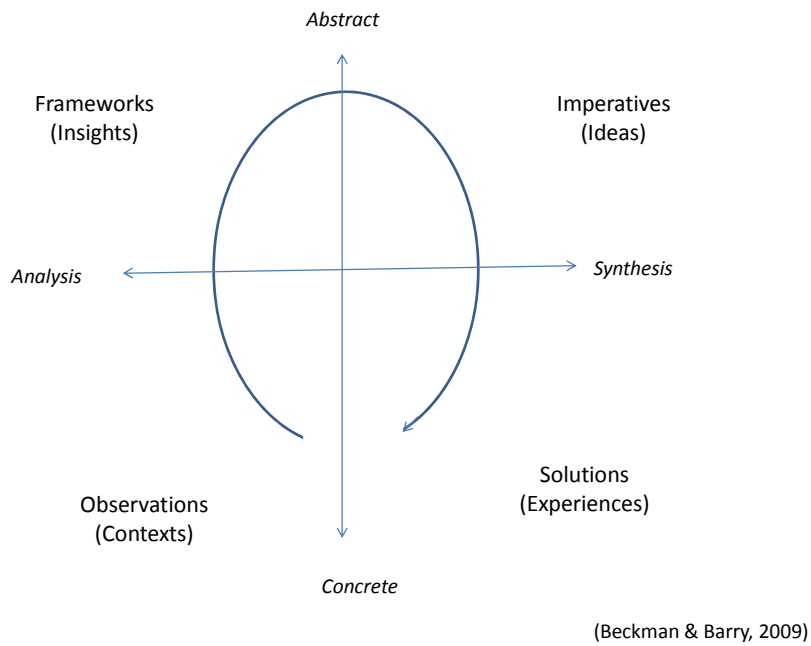


Figure 2. Storyboarding example

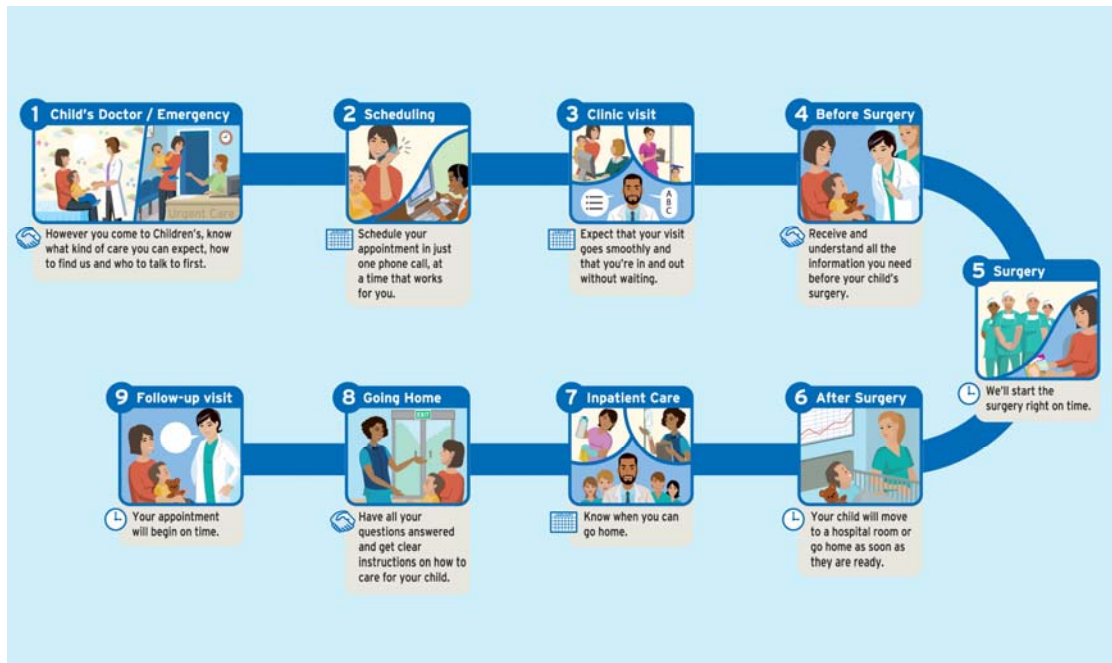


Table 1. Summary of Stages and Methodologies

| Stages | Description | Methodologies and Technologies | Outputs |
|---------------|---|--|--|
| Stage 1 | Understanding the Social and Cultural Context | Semi-structured interviews with visual prompt cards; ethnographic methods: | Multiple Personas - captured insights about diverse contexts and needs |
| Stage 2 | Constructing Temporal Experiential Journeys | Journey of patient: storyboarding; diagnosis preparation; develop language.; multiple stakeholders and resources involved; | Multiple experiences of personas over life journey; Gaps in availability of resources; Value propositions for new services |
| Stage 3 | Identifying Latent User Needs for New Services | Combines experiential journey maps and personas; Role plays; graphical representation; | Graphical representations; digital services opportunities; |
| Stage 4 | Translating Latent User Needs into Scenarios | Persona development journey, mapping developed to Fragmented Connections- five sub scenarios = | Narratives for each sub-scenario; Potential scenarios for a possible futures |
| Stage 5 | Communicating the Results/ Developing the Strategy | Transform scenarios to two minute vignette | Video vignettes for new possibilities for final deliverable for project. |