Enhancing Design Thinking with Framing

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ABSTRACT
The paper describes how design thinking can foster the creativity and innovation needed to provide business solutions in the trend to more complex environments. The paper however describes some limitations of design thinking and identifies the need to combine the social focus of design thinking with the more formal analytical methods to provide business solutions. The paper does this by integrating framing into the process to provide guidelines in creating solutions and following with system thinking for implementation. Here design thinking provides the social environment to look at existing systems in detail and identify their complexities and creative ways to address them. The analytical or scientific approach is then needed to put these into practice.

Keywords: Design Thinking, Framing, System Thinking

INTRODUCTION
The paper proposes ways to combine design thinking with framing to address the challenges in creating business solutions in the emerging complex business environment. Often developing solutions in complex environments will create dilemmas for designers as they have little guidance in ways to proceed in the absence of previous similar situations. At the same time specifications have become less clear and often change as solutions develop. The paper argues that adding framing to design thinking processes will provide such guidelines to make sense of the information collected in collaborative sessions and provide guidelines for designers.

Problems designers must now face in complex environments are often referred to as wicked (Head, 2013) or complex (Merali, 2006). The reason for the increasing complexity is that the business environment is increasingly one where a business operates in a large meta organization. In such environments businesses must be increasingly more adaptive and innovative to respond to address the challenges posed by continual change. These challenges can be found in many environments, such as:

- strategic planning (Camillus, 2008) or disaster recovery.
Design thinking in organizations

- Urbanisation and design of smart cities (Macomber, 2013) where a number of systems need to be integrated to provide solutions.

- Managing adaptive supply chains (Cozzolino, 2011) or global teams.

The dominant paradigm shift in design in the emerging complex environment is towards a more social approach to provide solutions with a gradual move from the more traditional and often called scientific approach. Such solutions are no longer analytically developed but often emerge as stakeholders collaborate to resolve complex issues through constructing acceptable social solutions. Solutions in complex environments often focus on changes in relationships between forms or creating new relationships to address unanticipated events. Such solutions must:

- Deal with the lack of a definite specific formulation or specification of the problem; there are just general goals such as increased sales in a new market, or increasing tourism in some region, or increased food security. Any methods must then continually search for requirements where while designing one system we are continually looking for unexpected behaviour from its connected systems. Responses are often innovative as unique problems come to the fore.

- Provide ways to test of whether a solution will work as any solution can result in unpredictable behaviours of users and stakeholders. There is thus the need to continually evaluate outcomes and learning from these outcomes to address new opportunities with creative responses.

- Support designs for increasingly changing social relationships where many issues are resolved by collaborative engagements between stakeholders where trade-offs are made in the light of deep engagements intended to arrive at mutually acceptable solutions.

Solutions increasingly call for innovative approaches. Innovation in this case is often not a new breakthrough product but can be a better way to do something to provide a better service to its customers or to improve the quality of its manufacturing process. This paper describes how design thinking combined with system thinking address these challenges. The paper describes how design
Design thinking when applied in a systematic manner has been used to foster the creativity and innovation needed to address wicked problems. Design thinking focuses on the qualitative social needs and creates the conditions for creativity (Amabile, 2012) by bringing together design relevant skills and social innovation while supporting them with creativity relevant processes. It provides the necessary requisite variety to respond to emerging situations in innovative teams through focusing on interdisciplinary teams. System thinking then puts these ideas into practice.

This paper first examines the way creativity has been introduced in practice and generalizes this to show correspondence to design thinking and ways to extend it to address issues emerging in wicked environments.

**CURRENT PRACTICES IN ORGANIZING THE DESIGN THINKING PROCESS**

There has been an increased use of Postit notes to foster the collaboration needed to address social solutions. Methods used to do this are typically Postit notes on visible boards where stakeholders can post observations and ideas and discuss ideas as they emerge. This is consistent with holistic approaches, including stories arise from different perspectives or disciplines and result in a holistic solution. The focus on any implementation based on Postit notes is thus on encouraging collaboration between all stakeholders involved in a system. Different methods are used to identify issues – either by the location on the board or by different colors used for each issue.

The example shown in Figure 1 is from a major financial institution. Other examples include (Forsgren, 2014), who describes an innovation cycle found appropriate for innovation within a private public relationship. A similar report (Courage, 2013) describes CITRIX a cloud company adopting a design thinking culture.

The important requirement of an implementation is a canvas, or design space, to record discussions, ideas and people’s comments on them. The emphasis here is on experimentation through bringing the tacit knowledge of stakeholders to jointly propose mutually acceptable solutions.
In summary our observations show that processes that focus on innovation to create business solutions can be generalized to:

- starts by collecting information and identifying issues with discussion often recorded on Postit boards, gradual capture of requirements through agile development and learning from outcomes.
- Then find a general design direction often referred to by the term EPIC as exemplified by epics with the epics identified by discussion,
- Implement each epic in a scientific way through technology using a scientific approach.
- The formation of epics usually occurs through discussion.

Correspondingly the language and terminology often found is stories, features, and roles and there is also the term epic that emerges – it depicts a set of actions that lead to a wider outcome. We thus see a strong correspondence to design thinking while system thinking follows to create a working system. Providing piecemeal solutions that start with a minimal viable product from which we learn more and begin and gradually refine requirements.
However just having post it notes or their equivalent is not sufficient. It is also necessary to organise these to deal with complex relationships and to proceed in a way that brings stakeholders together to create solutions acceptable to all stakeholders. To do this stories are often posted in different colours with each color corresponding to a different issue.

Currently the processes in most environments are ad-hoc with stories emerging based on stakeholder’s experiences and not in any formal way. The result can be that not all possibilities are examined given the lack of a framework on which questions can be based. This is where sensemaking and framing come in. It can then be argued that such an extension provides a way to integrate the scientific and social paradigms now needed in practice. In particular what can be seen as the design in the sense of Farrel and Hooker (2013) takes place in identifying design themes and the value propositions. From then on we go to the scientific approach using the value propositions as the equivalent of requirements.

**Some generic observations**

Our primary conclusion is that such processes strongly correspond to design thinking. From our observation we generalize the development as proceeding in the way shown in Figure 2.

In Figure 2 the issues block corresponds to gathering information as is the case of existing system. The business model design also appears in practice and many processes that use the scientific approach. In this major we link the two by introducing design themes and the joint value proposition into the design method. We also add two parts to formalize sensemaking – design themes and joint value propositions.
**Focus on creativity in existing practice**

Practice focuses on satisfying creativity requirements, especially on the social environment as well as creativity relevant processes, especially through the practice of brainstorming in collaborative settings based on discussion on postit notes and relationships between them. Using postit notes is not as simple as it sounds. Stories posted should not begin with a direct set of needs or solutions. They should begin with values in a solution neutral way. Stanford dSchool, shown in Figure 3 provides guidelines here. The process is known as the Stanford design thinking process shown in Figure 3. Practice is concerned with gathering stories of detailed activities and points of view of stakeholders. Step 3 in Figure 3 corresponds to making sense and creating solutions. It is here that guidance is needed to make sense of the issues arising in complex environments. It also emphasizes visualizations, metaphors and experimentation in creating solutions.
The process in Figure 3 focuses on collaborative techniques such as brainstorming to propose solutions, discuss them in the context of metaphors. Learning from this, the rest of the paper proposes how design thinking can be used as the foundation to create such environments.

As a result of the correspondence, a hypothesis that can be made from these observations of practice is that it is based on design thinking. Design thinking is fundamentally a social process. The major idea (Beckman, 2007) is that design thinking when compared to other methods focuses on a detailed analysis of existing systems. It goes beyond system interfaces and looks into the details of system operation. It begins by capturing detail through observations and points of view of stakeholders. These are captured as stories, which form the basis of the design thinking process. These stories are combined to make better sense through combining them into more logical forms. Ultimately they converge to solutions through an ideation process where stakeholders collaborate to create solutions.

Design thinking as suggested by Martin (2009) includes guidelines and suggestions for communication by encouraging visualizations and metaphors that foster communication between interdisciplinary groups. Metaphors are used here to guide solution formation as for example (Yoo, 2013) where the emphasis is on knowledge flows, social structures or business activities. Metaphors
Design thinking in organizations should be general to support an interdisciplinary environment. The solutions are then put into practice and tested.

In design thinking there is also an emphasis on ideation through perspectives and metaphors. Describe how this can address challenges. In summary here, current practices focus on the conditions for creativity as defined in Conti and Amabile (2011). These are to:

- Creating a social environment through the support for collaboration within the teams,
- Creativity related processes such as brainstorming and collaboration,
- Domain relevant skills through the interdisciplinary nature of the teams.

**Creativity Centered Tools**

The design thinking process is assisted with design tools. These tools are for value identification, idea generation and development and prototyping. *In proposing any design process we need tools that encourage stages of creative thinking.* The tools proposed here are shown in Table 1.

<table>
<thead>
<tr>
<th>Tool</th>
<th>Suggested use</th>
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<tbody>
<tr>
<td>Storytelling</td>
<td>The most frequently used tool for divergence and for gathering information</td>
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<tr>
<td></td>
<td>and ideas. Focus on connections and relationships.</td>
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<tr>
<td>Stakeholder maps.</td>
<td>To identify who will participate in the design team and their needs and</td>
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<td></td>
<td>points of view.</td>
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<tr>
<td>Rich pictures</td>
<td>Visualizations that show the main entities and relationships between them.</td>
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<tr>
<td>Personas to describe people’s values and needs.</td>
<td>Applicable in Phase 1 and is a mix of divergent and convergent methods.</td>
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<tr>
<td>Developing joint value proposition</td>
<td>Almost essential in all projects and evolves as design proceeds. Selecting and defining the best ideas.</td>
</tr>
<tr>
<td>Journey mapping to define how different stakeholders work through the system.</td>
<td>Applicable in Phase 1 and is a mix of divergent and convergent methods.</td>
</tr>
<tr>
<td>Lotus blossom to identify design themes.</td>
<td>Focuses on divergence or how to break an issue into a number of design themes. Finding and defining problems.</td>
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<tr>
<td>Mind mapping</td>
<td>Divergent</td>
</tr>
<tr>
<td>Business Building Blocks</td>
<td>Primarily an associative tool for externalizing ideas.</td>
</tr>
<tr>
<td>Scenario development</td>
<td>Convergent</td>
</tr>
</tbody>
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*Table 1. Tools used in Design Thinking*
The paper now define processes and tools that we have used in our teaching. The goal is to identify problems to be solved. The outcome is a joint value proposition that precisely defines what is to be done and how it will satisfy stakeholder needs. Design thinking then provides a large number of creativity-centered tools to identify problems and propose solutions. Figure 3 shows a combination of tools that we have experimented with. Our focus is on supporting a way to make sense of collected information and from this define a business intent. The process includes:

- gathering stories to focus on relationships,
- developing persona empathy maps, and
- using Lotus Blossom to identify major design themes while enhancing it with framing.

Figure 3. Putting tools together into a process

Identifying issues

One of the earliest is the rich picture. An example look at Figure 4. It shows the major entities in the system and relationships between them. A rich picture provides a visualization that provides a background for any discussion. Stories captured on Postit notes can be grounded into the rich picture as can be any new ideas.
Figure 4 - Rich picture – Garment Manufacture

The other important component is empathy maps. Persona empathy maps or profiles of people often emerge as stories are collected. They can also be developed through interviews. A typical persona map is shown in Figure 5. It is created not for individuals for a class of people in the business – for example, customers, project leaders, marketing personnel. It focuses on their beliefs and needs with one of the most useful ones being their greatest pains and gains. Most design then focuses on ways to alleviate the pains and provide the gains.

Figure 5. Persona empathy maps

IDENTIFYING DESIGN THEMES.

The second major phase in Figure 3 is identifying design themes. These design themes are then used to define the business intent. Lotus blossom plays a central role in defining specific themes to be
addressed. It is a brainstorming tool that guides stakeholders to break up wicked problems into manageable goals. As shown in Figure 6 Lotus Blossom plays a crucial role here. It is here that we address the main problems to be considered in the context of an overall issue. In a Lotus Blossom tool there is a central scheme and up to eight “blossoms”. For example, we can identify growing in a complex environment as central to the business and from this identify what are the major themes needed to do so. For example there is “maintaining quality” and “Responding to competition” as two examples.

FRAMING TO ASSIST IN IDENTIFYING DESIGN THEMES

We see framing as providing guidelines for identifying major themes and business intent. The frames proposed here are generic frames applicable across many problems. Types of framing:

Complexity introduces a number of terms (Merali, 2006) that mainly focus on monitoring the environment and developing processes to respond to events

Resilience – The important issues here (Duijnhoven, 2014) are seen as clear intent, actor or role, time and context. Others (Kantur, et.al. 2012)2) call for standards

Business - The paper proposes that business building blocks (Osterwalder, 2010) can fill this gap. Business building blocks are now increasingly used in business to support multi stakeholder decisions. In a way they provide the domain relevant skills essential in the creative process

These frames are then presented as guidelines used in identifying design themes and business intent. Figure 6 briefly illustrates the role of framing in creating business intent. It shows the main complexity frames and as an obvious example the need to continually monitor the environment and respond to change.

SUMMARY AND FUTURE WORK

The paper described ways in which design thinking can lead to business solutions in complex environments. It described ways in which design thinking is currently used to facilitate communication between stakeholders within a large firm or organization. The focus is away from changing existing process for short term gains; on the other hand the emphasis is to quickly create interdisciplinary groups and provide them with ways to communicate to create the business themes and intent respond to unanticipated events. The paper then suggested framing as a way to assist designers to create business solutions and identified the design thinking tools for this purpose.
REFERENCES


