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The integration of Design Thinking and Strategic Sustainable Development☆

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ABSTRACT

Human activities are now so pervasive and profound that they are altering the stability of the earth in ways that threaten the very life support system upon which humanity depends. The field of design has contributed to the creation of such complex socio-ecological problems, but it is also adapting as a source for solutions. Design Thinking (DT) was identified as a possible approach that could help create such solutions, and contribute to Strategic Sustainable Development (SSD). The purpose of the research was to examine potential contributors and hindrances of the DT process with regards to SSD, and create a prototype of an integrated process that could help achieve more strategic and sustainable outcomes. Using the Framework for Strategic Sustainable Development (FSSD) as a lens to examine and inform the above, combined with interviews, Action Research and expert feedback, an integrated process was created. It was indicated by participants of the Action Research and by experts that the proposed prototype could help reach strategic and sustainable outcomes, and that further refinement should be pursued. Consequently, a third and final prototype, suggesting a possible Sustainable Design Thinking (SDT) process, was developed.

1. Introduction

This paper explores the role that Design Thinking (DT) could play in responding to the pressing, global sustainability challenges humanity now faces. By analysing the DT process through the lens of the Framework for Strategic Sustainable Development (FSSD), as well as by seeking knowledge from practitioners in the field, the authors present an enriched DT process with strategic and sustainability perspectives integrated throughout. Such a synergistic outcome could serve to create novel insights for the field of DT and through application, design solutions supporting systematic and sustainable change.

1.1. The sustainability challenge

The large and growing impact on the biosphere in the Anthropocene era presents a major problem for humanity moving forward. Human activities are now so pervasive and profound that they threaten the very life-support system upon which humanity depends (Chick and Micklethwaite, 2011; Steffen, 2004). The majority of the scientific community agrees that, "Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and oceans have warmed, the amount of snow and ice have diminished, and sea level has risen" (IPCC, 2014, 2). Steffen et al. (2015) contend that four of nine vital planetary boundaries have already been crossed (climate change, loss of biosphere integrity, land-system change, and altered biogeochemical cycles of phosphorus and nitrogen) which risk inadvertently causing abrupt permanent change to the Earth system resulting in acute diminishment of human well being worldwide. It has long been recognized that the fragile social fabric is tightly linked to the integrity of environmental conditions (WCED, 1987) and as such, for important issues like "poverty alleviation and environmental protection … one cannot be meaningfully addressed while the other ignored" (Chick and Micklethwaite, 2011, 76). The nature of the challenge is

complex and requires approaches that are innovative, creative and strategic in order to shift from present course. New alternatives and approaches that foster systematic leadership for change are crucial to meet current sustainability challenges (Broman et al., 2014).

1.2. Design as a tool for sustainability

How humanity has designed its environment − buildings, products, systems and so on − has been evidenced as a major contributor to these advancing socio-ecological problems (Manzini, 2006; Parikh, 2010; Shedroff, 2009; Thorpe, 2013). However in recent years factions of the design field have been attempting to redress their shortcomings and leverage various concepts and processes to better address both environmental and social sustainability concerns. Examples include, among others, Cradle to Cradle (McDonough and Braungart, 2002), Method for Sustainable Product Development (Byggeth et al., 2007), Product Service System (Tukker, 2004), and Design for Sustainability (UNEP et al., n.d.) which feature strategies that try to mitigate environmental impacts. Also a greater focus on human dynamics, interactions, desires and needs have been elevated through approaches like Human-Centred Design (IDEO, 2015), Service Design (Stickdorn and Schneider, 2010), Base of the Pyramid Protocol (Simanis and Hart, 2008), and others. Design is not the only solution to all of the challenges human society faces, other measures such as policy and legislation must be included. Design however offers a *thinking approach,* a critical and often overlooked asset to the work of addressing sustainability challenges (Buchanan, 2001).

1.3. Design Thinking and sustainability

In the past few decades this designerly way of thinking, called in short 'Design Thinking' (DT), was increasingly recognised as a promising asset for fields other than design. DT gained traction in business, leadership and management sectors, amongst others, in order to cope with increasing complexity and to use as a driver of innovation and business success (Davis, 2010; Dorst, 2011; Fraser, 2007; Glen et al., 2015; Hassi and Laakso, 2011; Johansson-Skoeldberg et al., 2011; Royalty et al., 2015). Much discussion resulted from this rise in popularity, claiming that the ability to design is not a talent or skill only a few can possess, but one that can be learned and practiced to better solve problems across professions (Cross, 2011; Davis, 2010). Professional training programs, like Stanford University's Executive Education Initiative, have grown in order to influence business leaders and their organization's capacity for using DT in the workplace (Royalty et al., 2015). IDEO, the global design firm, has also taken this notion forward by creating an online platform that offers their free Human-Centred Design (HCD) toolkit (downloaded over 130,000 times) where individuals are encouraged to use the DT process to solve societal problems and share ideas (IDEO, 2015).

DT's emphasis on accessibility and relevance for creative, innovative, and potentially strategic problem solving across various disciplines, whether one is a professional designer or not, makes it a worthy candidate for further exploration, particularly with respect to addressing the multi-faceted and complex problems associated with sustainable development.

Though it has increased in popularity, DT does not usually incorporate sustainability unless the user chooses to do so (despite possible unwanted outcomes). There has been some research and work conducted on the pairing of DT and sustainability. Dewberry and Sherwin (2002) implemented DT as a tool for visioning the future with sustainability considerations. Dusch et al. (2011) created an early stage design toolkit, which successfully communicates sustainability tools and concepts to designers in the form of

a workshop. Eyto et al. (2008) present ongoing research on appropriate educational models for sustainability and DT with small to medium sized company employees and undergraduate design students. This article approaches integrating DT within regards to sustainability by using a scientifically developed, principle-based Framework for Strategic Sustainable Development.

1.4. Defining Design Thinking

Interpretations and understanding of the term 'Design Thinking' (DT) vary.[1] For the purpose of this paper, based on literature review, DT as a term will be used and characterised by the following key themes:

- *Human-centredness:* instead of a product or service, humans, their needs, practices and preferences are placed at the centre of a design process (Glen et al., 2015; IDEO, 2012; Young, 2010).
- *Research-based:* Research is necessary to understand the humans' needs, drivers and barriers (Young, 2010).
- *Knowing the surrounding context:* it is necessary to "zoom out for context" (Fulton Suri and Gibbs Howard, 2006, 247) to get an overview of the surroundings of the design problem.
- *Collaboration:* DT is collaborative and multidisciplinary, requiring a design team and the inclusion of stakeholders throughout the design process (IDEO, 2012; Young, 2010).
- *Optimism:* DT is based on the fundamental belief that everyone can create change − "no matter how big a problem, how little time or how small a budget […] designing can be an enjoyable process" (IDEO, 2012, 11).
- *Non-linearity and experimentation:* in research as well as in generation and evaluation of solutions including prototyping, one should think with his/her hands (Gravina and Saunders, 2010). This prevents the design team from sticking with one solution − which might not be the optimal one − at an early stage of the process, and encourages the exploration of several solutions (Glen et al., 2015; IDEO, 2012; Young, 2010).

1.5. The Design Thinking process

For the purposes of this research, one document translating the concepts of DT into a structured process was of great use. The 'Design Thinking for Educators' (DT4E) toolkit published by IDEO enables any person without a design background to "create solutions to everyday challenges" (IDEO, 2012, 10). Solutions can be products, services, environments, organisations, and modes of interaction (IDEO, 2011). While different versions to articulate the DT process may be described slightly differently, the basic tenants remain essentially the same (Carroll et al., 2010; Curedale, 2013; Glen et al., 2015), and therefore the authors chose the DT4E toolkit as it is a recent and clear expression of the process.

By "[putting] Design Thinking into action" (IDEO, 2012, 14) the process helps navigate the design challenge through five phases, which are presented chronologically but in practice require iterations amongst them (see Fig. 1). In the Discovery Phase the design team defines the challenge and researches it through different means (interviews, field visits, etc.). This phase requires the design team to diverge, whereas in the following Interpretation Phase, the team converges to transform the gathered information into 'meaningful insights' clarifying which aspects of the problem to

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[1] The authors acknowledge that there is no clear, scientifically based definition for DT (Curdale, 2013; Glen et al., 2015). For that reason this section is devoted to explain as clearly as possible their definition of DT.